



AMERICAN FRUIT GROWER MAGAZINE

October 1923
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The Fruit Grower and the Railroad

by Samuel O. Dunn
Editor of "Railway Age"

THERE are two very desirable ideals which we are not likely ever to realize in this big country of ours: Enough street cars to take every one comfortably to and from work morning and evening when everyone insists on moving, and enough refrigerator cars to move all of the constantly increasing fruit and vegetable crops just when they become ready for shipment.

The man with a fruit crop ready for shipment is to be excused if he shows some impatience over failure to obtain cars just when they are wanted, because his product must not be delayed. However, it is very doubtful whether many of these shippers give any thought to the tremendous investment at present, or the enormous amount of money to be spent in the future, in order to provide the railroad equipment they demand—an investment which, because of the peculiar character of the shipments handled in refrigerator cars, is bound to be unproductive for a part of the year.

All things considered, and setting aside prejudices, if they exist, it must be admitted that the railroads have done very well in their efforts to serve the citrus and deciduous fruit business of the country.

Prior to August 26th, 1920, when the last rate increase went into effect, the freight rate on lemons from California to New York, in carload lots, was \$1.25 a hundred pounds. Practically all the lemons which go to New York run about 300 to a box weighing 84 pounds. This meant a rate of \$1.05 a box, or 4.2 cents a dozen. The increase in the rate on lemons in 1920 made it \$1.66½ a hundred pounds, which was practically \$1.40 a box, or 5.5 cents a dozen. The increase in freight rates was, therefore, 1.4 cents a dozen—certainly not enough to destroy the industry, to stop the demand for lemons or to

justify, even under high rental expense or high labor cost to the retailer, attributing the high price charged for that fruit in the eastern markets to the freight rate. Because of the reduction in rates made last year, the present rate on lemons is \$1.50 a hundred pounds, or \$1.26 a box, about 5 cents a dozen. Lemons are selling in New York at about 40 cents a dozen.

The present average wholesale price of California oranges in Chicago is \$4.50 a box. Of this amount it is estimated that the California orange producer after paying freight charges, gets about \$2 a box. The balance of \$2.50 per box between the net price received by the producer and the wholesale price in Chicago is made up by the freight rate of \$1.35 per box; and icing, advertising and commissions, \$1.15 per box.

There is an average of 176 oranges in a box, so that the freight rate of \$1.35 a box amounts to only 7.6 mills, or about three-fourths of a cent, for each orange. The consumer in Chicago pays from 5 to 10 cents for one of these oranges.

This fruit business from California must have special service. Arrangements must be made at many points for icing and re-icing, which is done usually at the bare cost. After they are loaded refrigerator cars moving eastward become preferred freight and have the right of way over virtually everything excepting passenger trains. Most of the equipment moves westward empty for long distances.

Growth in Transportation of Fruits and Vegetables.

The growth in the fruit and vegetable business handled by the rail-

roads has increased so fast in the past 20 years that it has taxed the capacity of the railroads properly and efficiently to handle it.

This has been due mainly to the increasing consumption in the central and eastern states of fruits and vegetables grown in California, in Florida and other southern states. In view of the long distances such products of the farm and garden have to be hauled by the railroads—an average of about 1,400 miles—and the necessity of their reaching their destinations in a fresh condition it long since became necessary for the railroads to provide refrigerator cars for that purpose.

Twenty-one years ago, in 1902, the railroads had 18,222 refrigerator cars in service, in addition to which there were several thousand refrigerator cars in service owned by private corporations. The business grew so fast in the 10 years from 1902 to 1912 that in the latter year the roads had 30,693 refrigerator cars in service, an increase over 1902 of 68.4 per cent. Ten years later, in 1922, the railroads had been obliged to increase the number of their refrigerator cars from 30,693 in 1912 to 68,865 in 1922, or 124 per cent, and in that year there were about 46,000 additional refrigerator cars owned by private corporations, a total of about 115,000 cars. These cars now cost about \$3,500 each.

As already shown, the increase in refrigerator cars owned by the railroads in the 10 years from 1912 to 1922 was 124 per cent. If, therefore, we assume that during the following 10 years, from 1922 to 1932, there ought to be an increase of 100 per cent, which appears reasonable, it

would mean that during the next nine or ten years the railroads would be called upon to provide as many additional refrigerator cars as there were in 1922, or 68,865 plus about 40,000 cars to replace worn out ones, or a total of about 108,000 cars.

Twenty-five years ago, in 1898, the average cost of a refrigerator car was \$1,000. At the present price of \$3,500 each, or three and one-half times the price in 1898, the cost of these 108,000 cars to the railroads would amount to \$378,000,000, or at the rate of \$37,800,000 a year, for new refrigerator cars.

In 1899 the railroads hauled 4,583,000 tons of fruits and vegetables. Twenty years later, in 1919, they hauled 19,726,000 tons, an increase of 15,143,000 tons, or 330 per cent.

The railroads have not been able to provide enough refrigerator cars from year to year during the past 10 years to keep pace with the demand because of restrictive legislation and freight rates which during most of this period were so low that their net earnings were not sufficient to give them the credit necessary to secure the capital required for all the new equipment.

To Move Huge Tonnage.

The cultivation of grapes has increased enormously in California within the last few years, since the passing of the Prohibition Act. There are in that state about 164,000 acres of grapes now bearing and 442,000 acres not yet bearing. A very large acreage of grapes is expected to come into bearing this season. It has been estimated that in the coming season 75,000 cars of deciduous fruit and 55,000 cars of citrus fruit will be moved from California.

In addition to the foregoing, California will have about 18,000 cars of vegetables, not including potatoes, and

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It requires many thousands of trains, drawing a million refrigerator cars, to handle our great tonnage of fruits and vegetables.

Some Wenatchee Observations

by W. A. Scott

THE 1923 apple crop of the Wenatchee district, in central Washington, was estimated on August 1st at 16,500 cars, averaging 740 boxes to the car. The pear crop of that district probably will amount to 600 cars of an average of 530 boxes each. Besides, there will be about 125 cars each of apricots and peaches. The entire district comprises the orchard region on both sides of the Columbia river, in the immediate vicinity of Wenatchee; the larger area in the Wenatchee river valley, including such centers as Cashmere and Peshastin; also, productive orchards along the Columbia and Okanogan rivers, with Entiat, Chelan, Pateros and Bridgeport as some of the shipping points.

Long in advance of the apple packing season the growers and organizations concerned in packing and marketing decided quite generally to adopt the oil-paper wrappings, that is, many of the big packing concerns, including co-operative associations and private companies, are using the oil wrap for all varieties of apples except the Jonathan and one or two others. One concern, which packed 40 carloads last season in oiled wrappers, is using that type of wrap for the greater part of the 1,000 cars it will pack this season. The experience of this concern and others last year, together with data furnished by Government research men, demonstrated that apple scald, either in cold or common storage, may be obviated by the use of oil-paper wrappers that carry 15 to 20 per cent oil. According to an experienced packing house operator in Wenatchee district, the cost of oil wrappers amounts to 7½ to 8 cents per box of apples, that cost being 2½ to 3 cents per box higher than that of plain paper. Possibly 75 per cent of this season's crop of Wenatchee apples is being packed in oiled wrappers. On good authority it may be stated that at least 50 per cent of the Yakima apple crop is being similarly packed.

Use Mechanical Graders.

The large apple packing and storage concerns in Wenatchee district practically all utilize mechanical graders and conveyors that afford high capacity of grading, packing and storing for shipment. Plants of this class comprise those of the co-operative associations, those of orchard companies that pack their own products and the crops of individuals, and marketing concerns who grade, pack and

warehouse the fruits of their grower customers. Then there are the smaller orchard packs of individual orchardists, which are stored and marketed by the selling organizations.

Some Packing Houses.

Some facts relative to equipment and activities of several of the packing concerns may be given as typical of those in this district. For instance the American Fruit Growers, Inc., is equipped with a packing and storage plant at Wenatchee. It will handle 1,000 cars of apples this season, of which 600 cars are from its own orchards, the other 400 to be received from individual growers who pool their crops with that of this company. A part of the latter is received packed and ready for marketing, the rest coming into the company's plant for packing. This concern is packing in oiled wrappers except as to two or three varieties.

The equipment consists of five motor-driven Cutler graders, numerous

gravity conveyors, box-nailing stands, and belt conveyors for handling the boxed apples and culls. Each grading machine is 48 feet in length and has capacity to grade by weight 1,000 to 1,500 boxes per day. In attaining this result it must be understood that there is a co-ordination of hand sorting with mechanical grading. Each mechanical grader is a 2-unit machine, discharging the graded fruit into small canvas-bottomed bins on both sides. At the head end the apples are received from an apron feeder, and are passed along on two parallel sets of roller conveyors about 8 feet in length. In the passage of that distance the very important hand sorting is performed by six women sorters to each machine, three standing on each side. The first two sorters, facing each other, pick out the culls and place them upon a center belt that moves back toward the feed end, discharging upon another conveyor that deposits culls in a bin for that purpose. The next two sorters—one on each side—take up

C grade apples, placing them upon a belt that runs on through the machine by which they are graded by weight and dropped into canvas bins. In similar manner the other two sorters separate the fancy from the extra fancy grades, which by different belts are passed through the mechanical graders. In the run of the machine the apples of each grade are passed into canvas bins according to weight and size. The product of the orchard is divided by hand sorters into four general classes—culls, C grade, fancy and extra fancy; the culls are first eliminated, and then each of the three classes of marketable apples is regraded according to weight by the mechanical devices. This secures uniformity of size and weight for each class in the same grade. A return belt operated on each side of the machine serves to carry back as culls any defective fruit that may have escaped the detection of the sorters.

On each side of the machine are five packer stands where the apples of the various grades are packed in the boxes, the latter when filled being passed to the nailing stands over gravity conveyors, after which they are conveyed to the labeling room and storage.

Peshastin Association.

The Peshastin Fruit Growers' Association is the largest local co-operative organization of fruit growers in the Wenatchee district. In it are 75 members who have a total of 1,000 acres in apples and pears. A few large orchards are included in this group, the other individual holdings being in 15 and 20-acre tracts. The association last season packed and marketed 475 cars of apples and 50 cars of pears. The bulk of the apples are Winesap, Delicious, Jonathan, Rome, Spitzenberg and Stayman. The association buys all boxes, spraying material and other supplies. Its winter pears are packed, held in cold storage and marketed in the East. The earlier variety is shipped in loose boxes to the canneries.

This association's main grading and packing establishment is 96 by 198 feet, the building having a full basement of ventilated floor and concrete walls. The walls of the main story are of hollow clay tile. This main story, which is the packing room, is equipped with seven mechanical apple graders of the same type as those above described. In this plant the

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A typical western packing house showing sorting and packing crews and a battery of five graders.

Making High Grade Vinegar

by W. W. Cherioweth

THE home manufacture of cider vinegar should be an important adjunct to many apple growers. Those who have no other profitable market for their cull stock might well convert it into vinegar or those who manufacture apple butter or who manufacture and sell sweet cider will often have an excess of sweet cider which should be utilized in the manufacture of vinegar.

Good cider vinegar will always find a ready market because no other kind of vinegar is so acceptable for general household purposes nor so well suited to many manufacturing processes.

It does not require either expensive equipment nor extensive knowledge of science to enable one to convert waste fruit into a good market grade vinegar. It does, however, call for certain definite steps to be performed in a certain manner at a given time and the purpose of this paper is to detail the necessary information so that the inexperienced may become a successful vinegar maker.

The first step is to secure a supply of good grade clean sweet cider. The method of making good cider has been discussed in a previous paper and need not be repeated here. It might be well, however, to call at-

tention again to the fact that not all apples will produce equally good vinegar. The possible acidity of the finished vinegar is determined primarily by its sugar content. Since varieties of apples differ in their sugar content vinegar made from different varieties must of necessity differ in acid strength. Autumn and winter varieties will produce the best vinegar. This does not mean, however, that summer sorts are not to be used for vinegar, but they are less valuable.

Use Ripe Apples.

Apples should be made into cider when well ripened because at this stage they not only possess the maximum amount of sugar and have their highest quality but the yield of cider is also greatest. Overripe fruit is low in quality and the yield is less.

The barrels and other containers in which the cider is to be stored or handled should be clean. Old vinegar or molasses barrels should be thoroughly cleansed for best results. Hot water should be used freely in washing the containers which are to receive the sweet cider.

It has already been stated that ap-

ples differ considerably in their sugar content and that this sugar is the primary factor in determining the acidity of the vinegar. The amateur vinegar maker can count on getting 50 to 55 parts of acetic acid from each 100 parts of sugar in the freshly made cider or as it is often expressed the acidity of the finished vinegar will be approximately one-half the sugar content of the sweet cider. It materially follows then that if one must have a vinegar carrying 4.5 per cent acetic acid the sweet cider must run at least 9 per cent sugar, or, in other words, if the cider came from green, or overripe apples, or from a variety low in sugar, a vinegar of legal standard could not be made.

A Double Fermentation.

Vinegar made from sweet cider is the result of a double fermentation, that is, there are two distinct processes or chemical changes, one closely following the other, brought about through the action of bodies known as ferments. These ferments are microscopic plants of low order and are known respectively as yeasts and bacteria. Like all plants these fer-

ments require certain conditions under which they grow best and thereby perform the work desired most effectively. If the proper conditions prevail the results are reasonably certain, and good vinegar results. If conditions are not right results are most likely to be discouraging. It is in this matter of supplying the necessary conditions for most effective work of the yeasts and bacteria that the amateur vinegar manufacturer makes his greatest number of failures. A brief discussion of yeasts and bacteria at this point will serve to emphasize and explain certain statements to be made later.

Yeasts.

The yeasts belong to the low order of plants known as budding fungi. They have an almost universal distribution due to their minute size and to their ability to retain their vitality for considerable time in a dried condition. These light, dried yeast plants, or their spores, are blown freely about and explain why any sugary solution left exposed for a few days undergoes fermentation. Dry yeasts are harmless, but as soon as given the necessary conditions they assume active growth and they then become

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Rambles of a Horticulturist

by C. I. Lewis

YEARS ago Georgia was known chiefly as a state that produced lots of cotton and corn and some tobacco and many mortgages. Not until the development of the famous Fort Valley peach district—now perhaps the most famous district in the world—did the state attract the attention of horticulturists. Georgia has learned some very valuable agricultural lessons. She has learned how to stop the destructive washing of soil, how to maintain the soil fertility and how to diversify crops, and today she is becoming one of the most prosperous agricultural states in our union. Peaches, melons, pecans, figs, yes, even apples, are doing a lot to force Georgia to a position where she is destined to become one of our leading horticultural states.

We cannot do the state justice in one article and we are going to confine our story very largely to the two northeast counties of Habersham and Rabun. Up among the beautiful Blue Ridge mountains with their Yonah and Tallulah spurs, up where the elevation is 1,600 feet and better, where there are broad table lands, beautiful rolling hills and rich valleys already planted so extensively that one begins to think he is perhaps in parts of the Hood river valley of Oregon or the famous Wenatchee district of Washington. The growers in Habersham say that their county is the best and when you go up in Rabun, they say that theirs is far the best, but those who live in neither county and who seem to know, say that both can grow an abundance of the highest class fruit. Some time we will tell you something about the famous Fort Valley district, but not in this article.

In driving from Atlanta to Habersham county, we would suggest that you take in the old college town of Athens. There you will find a delightful southern atmosphere and the oldest state university in America, the University of Georgia, with its quaint old buildings. The agricultural school, however, has very extensive holdings and imposing new buildings. Prof. T. H. McHatton has shown how to take an old run-down farm and grow wonderful peaches. He has a remarkably fine peach orchard. Prof. McHatton not only knows how to grow fruit himself but knows how to tell others how to do it and all over Georgia you will hear him praised, in fact, Georgia is peculiarly fortunate in having a good group of scientists who are doing very much to build up its horticulture, such men as Prof. H. P. Stuckey, director of the Experiment Station; Prof. J. G. Woodroof, horticulturist at the Experiment Station, and O. I. Snapp and his associates at the government station, and at Cornell, W. W. Chase, assistant state entomologist, is doing a splendid work for the growers in that district.

The Famous Veeder Orchard.

On the way from Athens to Cornelia the road leads to Commerce, Jackson county, and at this point we come in contact with the first peach orchard of northern Georgia. Dr. L. G. Hardman has 125 acres. John Hardman also has a very fine orchard and C. J. Hood has two peach orchards at this point. The variety grown is principally the Elberta. The well-known Cornelia district comprises the towns of Baldwin, Cornelia, Clarksville and Demorest. Peaches and apples are both grown very successfully in this district. Lyman B. Veeder is a peach grower of that district who has already been introduced to the readers of the AMERICAN FRUIT GROWER MAGAZINE. Down through the state they will tell you that Veeder is the best peach grower in Georgia and when you say a man is the best peach grower in Georgia, it is pretty well admitting that he has not much competition in the entire United States. Mr. Veeder was a college professor, holding a fine salaried position. He came down a few years ago to save what looked to be a pretty sorry prop-

erty—an old peach orchard which looked as though it was about ready to die; the land washed in gullies so deep that a mule could stand in the gullies and you could not see the tops of his ears, a worn out ranch in every sense of the word, plastered with a \$29,000 mortgage. The orchard today comprises 150 acres and will soon be producing from 40 to 50 cars annually. There are 5,000 19-year-old Elbertas and in all there are some 14,000 trees on the place. In 1919 the old trees were dehorned and today they

tion. Possibly the soil is already too rich in potash. It is a rich red loam with a mica shale base. Nitrogen alone gives him bigger trees but not as much fruit. Phosphoric acid alone is better than potash alone, but the fruit all ripens at the same time. He has found that tillage must go hand in hand with fertilizing if best results are to be secured. He found that during wet years especially his Belles defoliated. He was putting on the fertilizer in both February and the middle of March, but he found that by



Good care pays. The trees on the right are the same age and on the same type of soil as those on the left, which have had good care.

certainly have magnificent tops and look like relatively young trees. The mortgage has been paid off and there is fruit enough on the old Elberta orchard trees this year to return all the money that has ever been spent on the place.

Controlling Soil Washing.

The first thing Mr. Veeder did was to learn to control gullies. He found that by putting in dynamite on either side of the gully, running the dynamite parallel to the surface of the soil and connecting both sticks in the center, it would blow the ridges out, so they would meet in the center and thus fill his ditches. He then

adding all the fertilizer early in February no defoliation takes place with the Belles.

Keep Down Costs.

Mr. Veeder states that one of the essentials in successful orcharding is to keep down the production cost, and machinery will do more in this line than anything else. He therefore does all his tillage with tractors and uses very heavy harrows which he himself designed. He planted the trees at least 20 feet apart, which, he says, is essential to get the best results in tilling with tractors and heavy harrows, especially where orchards are planted more or less on contour. He fol-



A view in the Veeder peach orchard at Baldwin, Ga.

learned to follow the ridges with grass and cover crop plots and proper drainage ditches. He has now practically filled up all his gullies and has been able to replant where the orchard had been washed out.

He realized early in the game that not only must he control the wash but that he must maintain soil fertility, and the entire orchard is covered every year. He has found that nitrogen pays but potash peculiarly gives him poor results in any combi-

lows a rigid spraying schedule, using two powerful Hardie outfits, and this year he will have three. He uses the regular schedule as recommended for the Georgia district, except that in the last two sprays he uses atomic sulphur and uses only about half as much lead. He fights the borers—controlling them very easily—by using paradichlorobenzene. He finds it is better not to thin until late June. In this way he gets away from what is known as the "shriveled" drop.

He says that it is unsafe in his district to thin as early as May. His pruning practice is relatively simple. It consists of going through the orchard and cutting back practically all branches that are at least 8 inches in length, thus forcing out laterals and keeping in plenty of bearing wood down close in the tree. He keeps his trees sufficiently open to get plenty of light and good development. His varieties are at present half Elbertas and half Belles. He says the Hale with him is worthless, as it is attacked too much by the brown rot.

Mr. Veeder's success comes from two fundamental practices. First, he grows fine fruit. Second, he knows how to market. His fruit is now averaging 74 per cent perfect. It is large, well colored and rigidly graded. He says you must do something different from the other fellow to attract attention in the market. One thing he does is to be very careful about his packages and he has a lithographed label on both ends of his boxes so that wherever they are stacked in the market, you can always see the label. When it comes time to roll the fruit, Mr. Veeder's father goes to the northern market and sees the cars come in. They do not believe it a good practice to have just one distributor handle their entire tonnage. Mr. Veeder says he believes he would rather have a wide distribution every year even though he might lose some money certain years by so doing. In the long run, however, it is the best marketing practice.

Apples the Big Crop.

The big crop of fruit, however, in this district is the apple. Two of the best known orchards belong to Mr. Black and Mr. Staight. We were unable to find Mr. Black at home but we enjoyed greatly walking through his orchard and we noted that he has a very fine orchard, well cared for.

We were fortunate in finding Mr. Staight at home. His orchard is near Demorest and he is one of the pioneer growers. He has 20 acres in bearing apples. The young trees are always very thoroughly tilled and as the trees become older he mulches more and more and tills less and less. He believes in fertilizing quite heavily, using from 15 to 20 pounds per tree of acid phosphate and 5 pounds of nitrate of soda, applied early each season. He is a very great believer in spraying. He gives his orchard at least seven or eight sprays. He says the great fight is against scab and it is only by a thorough schedule that this disease can be controlled. He certainly has received full value out of his sprayer. He is still using a Friend sprayer, which he bought in 1911.

Growers Making Money.

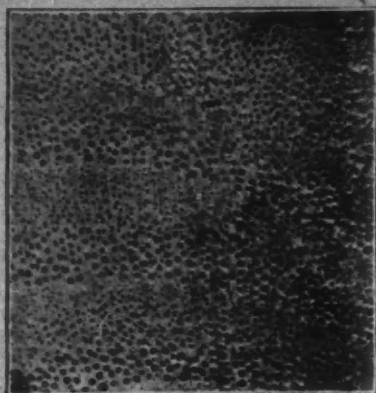
That this district is a sure producer of apples cannot be challenged when we find that there has been no failure of an apple crop since 1907. The varieties in Mr. Staight's orchard are the Yates, Terry, Shockley, Delicious, Winesap, Mammoth Black Twig and Ben Davis, with a few trees of such varieties as King, Mother and other varieties. He thinks the two best varieties for his conditions are the Yates and Terry, two Georgia apples. The Yates is practically never attacked by bitter rot. It will set two or three to the spur, the fruit colors well even in the shade and the yield is very high. He showed us a tree that had 44 bushels three years ago and 62 bushels last season. This variety bears young, often having a fair crop by the fourth year. Last season out of 2,600 boxes of Yates, they graded 2,300 boxes of fancy, which sold at \$2.25 f.o.b. This variety is also a very good keeper, lasting throughout the entire season. It is rather small in size but it is of good quality and of a somewhat mild flavor.

The Terry bears every other year unless heavily thinned. It is very small, the largest will run 125 to the

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California Rootstocks for Stone Fruits

by Myer J. Heppner
University of California



Cross section through peach root showing manner of distribution of water ducts. Note the gradual diminution of size of vessels in each ring.

ONE of the greatest problems confronting the horticulturist of the last few years has been that of rootstocks for the various species of deciduous fruit trees. The problem has been a perplexed one owing to the wide range of soil and climatic conditions existing within the confine of the major fruit sections of the world.

Fruit raising has been of the greatest commercial importance in California for more than half a century; nevertheless the rich soils and favorable climatic environments of the state have been largely responsible for the success of the industry rather than the expert knowledge of the growers. With the advent of higher land values and keener competition, orchardists are each year demanding more specific knowledge of the facts upon which their business is based. As the acreage devoted to horticultural crops has increased, plant pests, insects, and bacterial and fungoid diseases, have become more numerous by introduction from other regions and by adaptation from native host plants. Accumulated experience and observation leads the present day horticulturist to the conclusion that in order to secure rootstocks adapted to various environments, which at the same time are resistant to plant pests, it will be necessary to make a more thorough study of the whole problem.

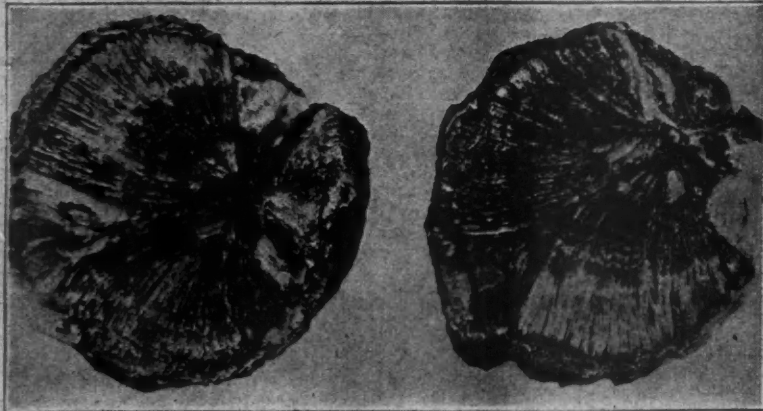
Excessive irrigation has caused the water table to rise in recent years in certain orchard regions to such an extent that the root systems are often submerged in water for long periods of time. As virgin soils are put under cultivation, new problems constantly arise; for example, the calcareous nature of the subsoil in one section is causing fruit growers considerable apprehension. The leaves of pear trees are here rendered chlorotic by the excessive lime content of the soil. Observations have shown that trees on certain stocks are more resistant to chlorosis. Other problems facing the present day grower are pear blight and oak root fungus, diseases for which no satisfactory methods of control have yet been discovered. The remedy for the above mentioned troubles will possibly be found in the selection of proper rootstocks.

Rootstocks for the Apricot.

One of the chief difficulties that has been encountered in the rootstock investigations has been the lack of proper methods of identification. In many cases growers attribute the success or failure of their trees to bring profits, to the rootstocks used. This may be true but the trouble is that growers are not positive of the rootstocks they are using. A grower may think his trees are on a certain stock but in reality they are on some other stock. Such cases have been called to the writer's attention on numerous occasions. Infrequently, nurserymen send trees to a buyer on a stock other than that which was ordered. In order to solve some of these difficulties the writer has worked out a simple means of identifying the various rootstocks used for the stone fruits. These will be incorporated in the general discussion which follows, namely—rootstocks for stone fruits under California conditions.

Owing to the success with which the apricot can be budded on various stocks, it has a wide range in adaptation to different soils. The best all-round stock is the apricot seedling, especially on deep, rich, well-drained, heavy soils. If the soil has a tendency to become too dry or too moist, the apricot root should not be used. This

The apricot root can be distinguished from the peach and Myrobalan plum by its beet-red color. Although the peach root may attain a reddish color when the root becomes several years old, it is not of the same coloration as that exhibited by the apricot. Young peach roots are always bright yellow in color, the color



Result of using wrong stock, apricot on almond. Growth was perfect for two seasons until a strong wind broke off the top. There was no knitting of the wood.

root cannot withstand "wet feet" for any length of time.

Where the soil is light, well-drained and dry, the peach root seems to give the best results. It is claimed by some growers that when the peach root is used the tree makes a quick growth and comes into fruiting early. The fact that the gopher does not like the peach root is another point in its favor.

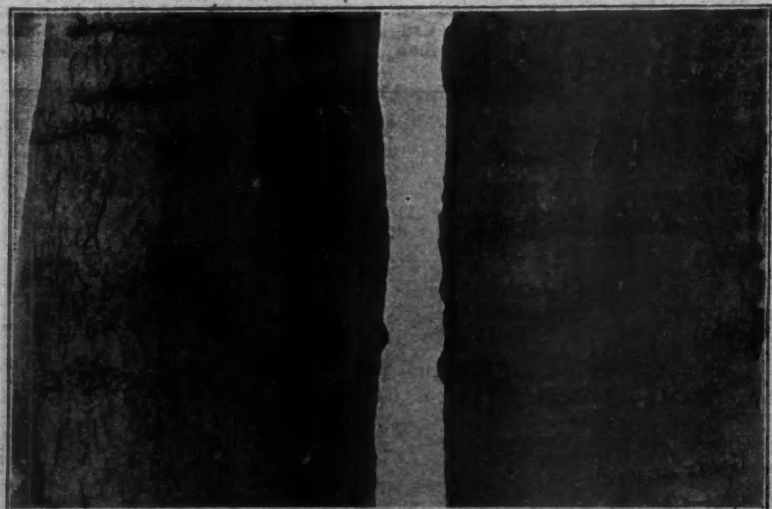
The Myrobalan plum root is used to adapt the apricot to the soils that are too wet for the apricot or the peach. It is also used where a light soil is underlaid with a heavy, retentive sub-

changing to dull red as the root develops. The Myrobalan plum root is always brown in color no matter what be the age of the root.

It thus appears that color alone is sufficient to distinguish the roots commonly used for the apricot, namely—beet-red for the apricot; yellow for young peach and dull red for old peach roots, and brown for the Myrobalan plum.

Rootstocks for the Almond.

There are only two rootstocks of importance that are used in California for the almond—namely, the almond



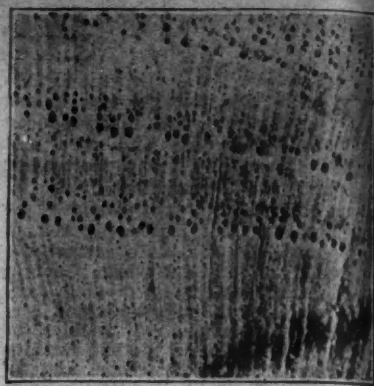
Almond to the left, peach to the right. Note rough character of bark of almond and smooth nature of peach root. Note also the rough ridges on peach root.

soil. This is the only root used for the apricot that can withstand standing water.

Although the apricot has been worked successfully on the almond root it is not recommended as a rootstock. In most cases the union that is made is poor, and it is only a matter of a few years before breakage occurs at the point of union due to strong winds. It appears that knitting occurs only at the bark, thus causing a very weak union. As a rootstock for the apricot the almond has now been practically abandoned.

seedling and the peach. The almond root is used where the soil, moisture and drainage conditions are most desirable. It will live in comparatively dry soils, but does not make a large tree or bear crops of nuts if the dry conditions continue. It seems to carry the tree over dry seasons much better than any other stock.

The peach root is used where the moisture content of the soil varies from time to time during the season, or where the soil moisture is quite variable in different portions of the soil. The peach root also does better



Cross section through almond root showing manner of distribution of water ducts. Note the large vessels are laid down in distinct layers.

on shallow soils or where hardpan occurs at a relatively small depth. Where irrigation is practiced during the summer it seems to do better than the almond root. In general, the peach withstands fluctuating temporary extremes in water supply better than the almond.

The Myrobalan plum and apricot have also been used as stocks for the almond, but with little success. Both make a poor union. The almond top outgrows the plum root causing a constriction just below the union. The apricot is not recommended because breakage occurs very easily at the point of union. Both these roots have now been abandoned as stocks for the almond.

The almond and peach may be separated by any one of three characteristics: The surface of the peach root is smooth while that of the almond is rough. If the root is cut so that the thickness of the bark can be observed, one will notice that the bark of the almond is relatively thin and that of the peach relatively thick. The thickness of the peach bark is about twice that of the almond. If a peach root is cut horizontally and examined with a hand lens or naked eye it will be noticed that the small openings (water tubes) are scattered regularly throughout the entire wood. If an almond root is examined in a similar manner it will be observed that these openings are arranged in more distinct rings. The reason for this difference is that the vessels are formed throughout the year in the peach root and only in the spring in the almond root.

Rootstocks for the Cherry.

A large percentage of California cherry trees are propagated by budding on the Mazzard root. The other stock used is the Mahaleb. Both roots have their advantages and disadvantages. Where conditions are proper the Mazzard seems to be the better stock. The most important advantage of the Mahaleb over the Mazzard is its hardness. It is also less subject to injury by standing water in the soil during the winter season. Some growers claim that cherries on Mahaleb root seem to be more resistant to die-back, one cause of which is summer drought on shallow soils. One objection to the Mahaleb root is that it often makes a poor union in that the top outgrows the root, causing a constriction below the union. As a result of this constriction, the Mahaleb is often credited with a dwarfing influence. Taken all in all, it appears that the Mahaleb is the best root for soil conditions that have a tendency to become too dry or too wet, and that where soil conditions are proper the Mazzard is the best. Careful observations have shown that the Mazzard makes a larger tree but comes into bearing later than those on Mahaleb.

From all external appearances these two roots are alike. To the average layman, separation is impossible due to this similarity. However, a very simple method of distinction has been worked out by the writer. If a small piece of bark of the Mazzard root is placed in the mouth and chewed, it will be found to be very bitter and astringent. A similar test made with

(Concluded on page 31)

The Farmer Versus the Sportsman

by Fred C. Sears

SHALL we raise apples or deer; pears or partridges; raspberries or rabbits? These and other similar questions must certainly arise in the mind of anyone who studies into the conditions in many of the farming sections of these United States today.

Of course there ought to be but one answer to any such question. The reply ought to be that apples and pears and raspberries "have it by a large majority." But when one comes to look into the matter he soon begins to have doubts on the question. Can a state legislature be considered to be greatly enamored of any industry when it will deliberately pass laws to protect animals which prey upon that industry?

Partridge Damage Serious.

Let us examine into a few cases in point. Take the question of partridge damage to fruit trees during winter. This damage is done by the birds nipping off the large terminal fruit buds from the trees. It is a well known fact among fruit growers that many of our varieties of apples bear their entire crop of fruit from such buds and that with all varieties these buds form a very important part of the fruiting area of the trees. Remove all these buds from a tree of the first mentioned type during any winter and it simply does not bear any fruit the following season. Nor is this all. Observations are on record which show that in many cases the spur thus disbudded is not only prevented from bearing that season, but dies outright as a result of the injury. Prof. J. H. Gourley reports that in some investigations he made about 80 per cent of these spurs died and observations made at the Massachusetts Experiment Station tend to confirm these results. Now when one remembers furthermore that these spurs are not again replaced on the branches from which they disappear, and that cases are on record in which nearly 100 per cent of the fruiting buds were removed from the trees, the gravity of the situation is apparent.

Under these conditions one would naturally expect that in any section where orcharding is important steps would be taken to see that partridges were not allowed to become abundant. How does it work out in practice? In a state adjoining my own during the winter just past the farmers were incensed at finding their trees being attacked by partridges

and seriously disbudded and made a move for a longer open season on partridges with the idea of reducing their numbers sufficiently to prevent any serious damage to apple orchards. The sportsmen were up in arms at once and came forward first with the argument that the partridges did little if any of this work and what they did in the way of disbudding was really no detriment to the trees. Finding this rather an untenable position they shifted their ground and contended that that particular section was of more value anyhow as a sportsman's paradise than as a farming section, though it is generally recognized by those who know it as one of the very best orchard sections in New England. When it finally came to a hearing, while the farmers had rather the best of the argument, the decision as to what should be done was left to a committee representing both sides, this committee to suggest legislation, with the general understanding that the open season for partridges should be somewhat extended.

The Rabbit Question

Turning now to another source of danger to our orchards we have the rabbit question, which is essentially like the partridge problem. It is apparently assumed by our law makers and others that there is no reason why our farms should not be turned into game preserves, and we therefore find laws which prohibit the killing or snaring of rabbits except at certain times of the year and in certain restricted numbers. Of course, the situation is apparently eased up a little by allowing the farmer to trap rabbits on his own land, but this permission is so hedged about as to be decidedly reduced in value. The farmer must first make an affidavit that his crops have been injured by rabbits; he then sends this in to headquarters and is granted a permit to trap; but this can only be upon land "used for the raising of fruit, vegetables and other products." In other words if the rabbit comes into the farmer's plantation he is free to try to trap it, but he cannot go into the adjoining bushland, the farmer's own property, where the rabbits are breeding, and clean them out!

Rabbits Being Imported

And to add to the gravity of the situation it is often quite possible for any person, with certain rather meager formalities, to import and liberate either hares or rabbits. To show how easily this privilege may be secured and abused, there were imported into Massachusetts and liberated in Franklin County this past winter and have been for several years past a number of the so-called snow-shoe rabbits. Of this rabbit Prof. W. G. Brierley of Minnesota says, "In regard to the feeding habits of the snow-shoe rabbit, I can only say that our apple trees are almost all located in the southern half of Minnesota, whereas the snow-shoe rabbit is located in the territory from Duluth northward. From comments made by the settlers in these regions, particularly along the north shore of Lake Superior from Duluth to Two Harbors, I am forced to conclude that the snow-shoe rabbit will feed on young apple trees just as his cousin, the common rabbit, will do. While these instances have not been very numerous, it is very evident that injury has been done, and if the range of the snow-shoe rabbit coincided more with the general orchard range, I am sure that we would find them doing damage just as frequently as the little cottontail rabbit." Yet these beasts are deliberately imported and turned loose in one of the best fruit sections of the state of Massachusetts!

Jack Rabbit a Nuisance.

Another instance is that of jack rabbits in the Hudson River Valley, New York. The information furnished the writer by one of the leading fruit growers of the state of New York is as follows:

"You may well be alarmed at the introduction of any brand of jack rabbits in your state. The 'jacks' we have here were turned loose at Millbrook, 15 or 20 years ago by a rich man who introduced them, bred them in large numbers and turned them loose every fall. As soon as we learned that they were bad on apple trees we demanded an open season on them for the full year. We had to fight the sportsmen clubs several years, but finally got it. These jack rabbits have caused scores of thou-

sands of dollars in damages to apple trees and they cannot be suppressed. From Millbrook they have spread nearly all over the Hudson Valley as far north as Kinderhook, and have crossed the Hudson on ice and are very destructive at times all over the valley."

The Deer Problem.

Turning now to a third and last example of a legalized looter, or protected pest, we have the deer. The writer's friends out in Kansas look incredulous when he tells them that the worst enemy which the orchardist has to contend with here in good staid old Massachusetts is the deer. But such is undoubtedly the case in many sections of this commonwealth, particularly when we consider the difficulty of fighting the pest. When I say that on my own farm we have in the last 15 years pulled out and thrown away over 2,000 young apple trees that were ruined by the deer, it will certainly suggest that deer constitute a real danger. And many other growers in the state have had equally disheartening experiences.

In our case we had one block of eight acres of young orchard which was pretty well surrounded by woods and which became the regular feeding ground of a herd of seven deer, so much so that we nicknamed the block "The Deer Pasture." And in spite of all our efforts to drive them off they continued to browse on the trees till practically all of them were ruined and the block had to be abandoned as an orchard. Of course we have received some financial compensation in the way of damages but what does that amount to as compared to the real value of the trees? We probably collected from the state all told an average of a dollar and a half per tree for those that were destroyed, but usually the tree was not given up as hopeless until it had been out at least two years and frequently three or four, so that we were out the original cost of the tree, the expense of caring for it for from two to four years, and the value of two to four years' growth. Not only this but there was always the item of deferred returns from the trees. This is an item that is almost never considered but which constitutes a very real and serious damage. Suppose, for example, that I set out an apple tree and after three years have to replace it on account of the damage from deer. And suppose, for the sake

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Down in Old Kentucky

by C. I. Lewis

SEPTEMBER 3rd and 4th were red letter days for the Kentucky Horticultural Society when they held their annual meeting in the Henderson district. About 200 growers assembled to determine what they could learn from the horticultural practices of the most successful growers in the district. The first orchard visited was the Yeaman farm. This orchard consists of some seven hundred 16-year old apple trees with an estimated crop this year of about 3,000 bushels. The orchard consists of one-third Stayman, one-third Winesap and one-third Black Bens. The Staymans in the orchard were splitting quite badly. This seems to be a weakness of this variety, especially when dry spells are followed by rains. The orchard on the whole, however, was in very good shape. Ordinarily, seven sprays are given this orchard but this year nine sprays are being given in order to keep the fruit good and clean. The orchard is being nitrated and this program is being carried through for two years as the orchard was somewhat run down and needed renovation. Five pounds of nitrate of soda are applied to each tree early in the spring. The space between the trees is disked both ways. The cover crop of rye is sown in the fall and disked in the spring.

There is every evidence that this orchard is coming back in fine shape and is responding to the good care being given.

The Hillhead Orchard.

The next orchard visited was the famous Hillhead orchard, owned by the Stites Brothers, William and Richard. This orchard has some 3,000 bearing apple trees and there is a block of 500 young trees consisting of Yellow Transparent, Grimes Golden Rainier and Golden Delicious. A block is also being set out of Henry Clay, an early apple which follows the season of the Yellow Transparent.

The Stites Brothers are progressive. They have made it a point to visit the best orchards in the middle west and to pick up all the horticultural information they possibly can. They found that their orchard was too closely planted to get the best results and some 700 of the older trees have been removed. In order to avoid collar rot, the Grimes Golden are all double worked on Northern Spy. They have found that it does not pay to plant Winesaps in low places as

this variety will not stand wet feet. They are planting cover crops of clover and on the hills where there is a tendency to wash and the soils are somewhat light in character large quantities of corn cobs are being applied. These can be obtained from the local mill for the hauling. Richard Stites is very enthusiastic over their use, claiming that they absolutely prevent washing, that they gradually decay in the soil and that they do not interfere with orchard tillage practices.

There is quite a large peach orchard on the place of two and three-year-old trees, some of the three-year-old having a good crop. The older peach trees are five years of age. They are planted 18 feet apart, which is too close for the soil and climatic conditions of northern Kentucky.

In both the peach and apple orchards varieties are being tested to determine what is best for that district. Some Delicious and King David apples are being planted among the apple blocks for pollination purposes. The King David has withstood cold snaps and frosts unusually well.

The Stites believe in the use of fertilizer and believe that commercial fertilizer, cover crops and tillage must go hand in hand to get the best results. Nitrate of soda, from 3 to 7 pounds per tree, is applied throughout the orchard. On some of the older trees a straw mulch is used.

There is a very unique water supply system on the place and the supply is sufficient that the tanks need wait but a short time to be filled for the next trip. The Stites Brothers believe that this is very essential, that during the rush season as little delay as possible should occur.

Oil Sprays Superior.

From the Stites orchard we visited the home farm orchard of H. P. Barrett. This orchard consists of some fifteen hundred 16-year-old apple trees, consisting of one-third each of Winesap, Stayman and Black Ben Davis. The crop for this year is estimated at 7,000 bushels. There are 40 acres of young apple trees, consisting of one-third each of Winesap, Stayman and Delicious. The old orchard has been heavily mulched to straw and the roads and lower places have had a liberal application of corn cobs. The most interesting observation made in this orchard was the

(Concluded on page 21)



A cluster of Du Chilly filberts.

IN discussing the filberts as grown in the United States it is soon evident that the industry is quite new, but also just as evident that there is a definite field for it with good prospects for the future.

A study of the importations of filberts into this country from European countries shows that the people of the United States are consuming about 25,000,000 pounds of these nuts each year. Not only does the study of the importations show that the amount consumed is considerable but that the increase from year to year has been much more rapid than the increase in population, for in 1909 there were imported into this country about 7,000,000 pounds of filberts, while in 1922 the importation was close to 25,000,000 pounds. It only goes to show that filberts

Filbert Growing a New American Industry

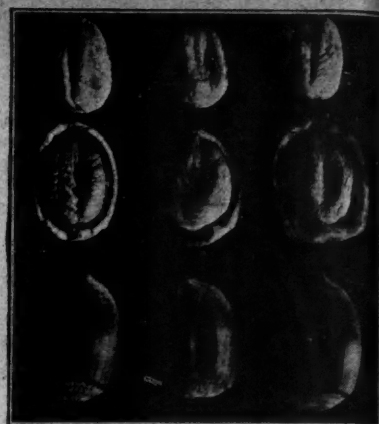
by C. E. Schuster
Oregon Agricultural College

our older horticultural literature of this country and we know that they have been repeatedly tried out, there is, as yet, no record of any trees of any considerable age in that part of the country. McGlennon and Vollersten of Rochester, New York, report good success with the varieties that they are trying out at this time. According to their reports, they have had no difficulty with the eastern filbert blight, the trouble that has been so destructive to the older plantings. According to the earlier writers, the varieties tried out were not from the same section of Europe as these are, as McGlennon and Vollersten are now trying out varieties that came mainly from Germany. It may be that they have found the strain or group of varieties that are more or less immune to the ravages of eastern filbert blight, but this can only be told by time and by thorough testing out.

European Origin.

The varieties being grown in the Pacific Northwest originally came from England, Spain and France. Although large numbers of filberts are grown in

of elevations no one knows as yet, though we do find the wild hazel growing in the mountain close to 5,000 feet above sea level. We generally find that the filbert will grow in the same locality and under the same conditions where the hazel thrives but if the hazel does not do well, we find that the filbert behaves in a corresponding manner. On that account just because the wild hazel will grow in a section is not an indication that filbert growing will be a profitable proposition for we want to plant filberts where the hazel grows luxuriantly. Filberts are found growing well in many types of soil, just so the soil is deep, fertile and well drained. Probably the largest trees are to be found on the sandy river bottom soils, though this is more than likely due to the moisture and fertility rather than just because it is a sandy loam. Wild hazel can be found growing at its best under these conditions, often reaching a height of 35 feet. Some claim that the nuts produced on the trees grown in the river bottom will not be of as fine a quality as those from the trees



Some prize taking nuts.

soils the greater distance is to be recommended, for as time goes on and more observations are being made, it becomes evident that the filbert, if grown as other trees are, will make a large tree in time. In times past it was recommended that the plantings be made from 12 to 15 feet apart and many plantings were put in that way. As a result these groves are now grown together so badly that it is necessary to thin them out. With the high price of nursery stock as it is now, there is no particular incentive to plant the trees thick, getting a crop from a large number of trees the first few years and then thinning out after a time. In fact, it will be much better for the



A young filbert grove.

have found for themselves a place on the menu of the American people. If, as some authorities claim, this nation is becoming less of a meat-eating nation it is certainly including on its vegetable list an increasing amount of nuts and nut products.

When we consider that the imported filbert is frequently a year old when it arrives on our market and that a filbert rapidly loses its fine flavor with age and especially in drying out, it is surprising to one that this nut is so popular. Compared with native-grown nuts, the imported ones are very frequently of a rancid, stale flavor. This was evident the last year when the wholesalers would pay a premium of 5 cents per pound for Oregon filberts even though the imported ones were of the best quality and flavor encountered in years.

The climatic limitations of the filbert are not very definitely established as yet. In the Pacific Northwest it has been shown that the filbert is very well adapted. This is particularly true of that area west of the Cascade Mountains in Washington and Oregon. In the eastern part of the United States it has not been so well established, for, though we find varieties of filberts described in some of

Italy, apparently no one has ever imported any considerable nursery stock from that country. A large part of the plantings now being grown can be traced back to stock that was grown and distributed by Felix Gillette at Nevada City, California. Mr. Gillette, according to his record, imported his first material from several different places and after testing it out distributed it throughout the Northwest.

Occasionally we find an old tree that shows us the future possibilities as to its size and growth. There is one near Scottsburg, Oregon, that is over 60 years of age and has a spread at the present time of 45 feet. The lady that owns this tree says that when there is a good crop she gets about three flour sacks full for herself, after which she gives the remainder to the neighbors. Evidently when left unpruned and allowed to grow and develop naturally they will attain a good size.

The older plantings are usually of small acreages, but some of the younger plantings now being made are 30 to 40 acres in extent. The plantings are pretty well scattered throughout western Oregon from sea level to an elevation of 1,200 feet. Just what will be the limit



The way filberts bear.

growing in the upland. With many people this is a debatable question and we have no very definite or accurate data on this subject.

Immune to Frost.

Filbert groves can be located almost without regard to frost conditions. Even though the filbert blooms in this country during January and February, the blossoms rarely suffer damage as the flowers will withstand a temperature of 12 to 15 degrees F. above zero, while the catkins are uninjured at several degrees below zero. The only possibility of real damage from frost or freezing is in locating the filbert grove in a frost pocket and then being caught during the latter part of January or early February by one of the sudden cold snaps when the temperature drops to zero. This might be disastrous to the pistillate flowers and result in a light crop the next year. Other than this there is little danger from frost as ordinary frosts that are so disastrous to other fruits have no effect at all upon the filbert.

Distance to Plant.

Filbert trees are being planted 20 to 25 feet apart. In most

average person to set the trees at a permanent distance, rather than to trust to their own will power and judgment to take the trees out when planted too thick. With the average grower, the will power ordinarily is not sufficient to take out the trees at the proper time, so that you will find that the planting is becoming crowded just at the time when it should be developing at its best.

In planting the filbert tree, care must be taken not to allow the roots to dry out during the operation. Unlike most trees, the roots are still fibrous and the larger roots do not develop until the second year, so particular care must be taken to see that these fibrous roots are placed in moist soil, but since filberts sucker so badly it is advisable not to plant them any deeper than is necessary. The tree should be set so that the roots will be in moist soil when the warm dry season comes on and yet not too deep to make the removal of suckers difficult. If the trees are set in deep, it will be too much work to get down to the base of the suckers and remove them at the crown of the tree. If trees are set very early it will be a great aid as the roots will have a

(Continued on page 16.)

Our Editorial Comment

The Railroad Situation

THE leading article in this month's issue is by Samuel O. Dunn, editor of the "Railway Age." No question of greater interest is facing our fruit growers at this time. The greatest need of our fruit industry is for more cars as our tonnage is continually increasing. We also need quick service and lower rates. This is a pretty hard combination to demand of the railroads all at once. It takes lots of money to build refrigerator cars and locomotives. To get such money in liberal amounts, the railroads must show themselves to be a profitable venture or else the public will not invest in railroad securities and money will be hard to secure.

We believe the greatest needs of the American fruit industry at the present time are better service, more rapid service. We need many more cars than are available at the present time. If fruit arrives in the market overripe or otherwise deteriorated, it becomes a drug on the market and is frequently sold at a loss to the producer. Choice, firm fruit generally sells well and will soon make up the few extra cents charged for freight. If the railroads are able to establish a better service, provide more cars and move a greater tonnage, they should, in time, be able to gradually reduce the rates—but to ask them to make a radical reduction in rates and at the same time make a huge investment in cars and locomotives, is a good deal like asking a man to lift himself by his boot straps.

We are rolling in this country today about 1,000,000 cars of perishable products annually, including both fruits and vegetables. To handle this huge tonnage we have only about 100,000 cars. It is evident to all that we not only need many more cars to handle the present tonnage, but we must have a great increase to handle the future tonnage.

We believe the great body of fruit growers are pretty conservative and sensible men and we hardly believe that they will be led astray by propaganda that will result in government ownership, although present propaganda will lead to that unless checked. One only needs to study the handling of the average municipality to be convinced that city, state or governmental agencies generally manage their affairs extravagantly and inefficiently. One only needs to study, for example, the general inefficiency in the handling of our city streets. They are no more than laid down at a cost of \$20,000 to \$50,000 a mile then they are torn up. Some way or another we have not learned to do things well through government and state agencies. Many instances could be cited of inefficient government management abroad. The number of employees used in handling some of the trains on the continent of Europe is almost unbelievable.

We hope that fruit growers will give this question their best thought and that they will not be stampeded by politicians who could do little or nothing to relieve the situation. We believe the railroads, if given an opportunity, will rise to the occasion and eventually will not only give a better service but will be able to give us more cars and better rates.

The Ben Davis

RUMORS are reaching us that there is to be a revival of Ben Davis planting in the middle west and Mississippi Basin. We sincerely hope that this planting is not going to be general, although we are somewhat disturbed to hear some horticultural experts state that if they were planting again, they would make 85 per cent of their orchard Ben Davis.

There has been a big decline of Ben Davis acreage in the past 20 years due to poor care

of this variety, owing to its relatively low value and to the fact that it is so susceptible to disastrous diseases. While the present tonnage may be marketed to advantage and there may be growers here and there who will make money in growing Ben Davis, there is very little indication that the present tonnage can be materially increased at a profit to the growers. The Ben Davis is very subject to diseases, such as blister canker, blotch, scab and bitter rot. It is just as expensive to grow them to a good commercial standard and it requires just as much money for tillage, pruning, spraying and harvesting as it does for the better varieties which bring more money. No matter what the price of our standard varieties may be for a given season, the price offered for the Ben Davis is invariably lower than that for most varieties. It is only occasionally when a well-colored lot is brought out of storage late in the season that attractive prices are received.

The growing of Ben Davis through the Mississippi Basin years ago led to slovenly methods—poor tillage, axe pruning and scoop-shovel packing, the fruit being sold very largely in bulk. It is no wonder that a large percentage of the 11,000,000 apple trees that have died in the central west in the past 20 years have been Ben Davis.

It is rather interesting to note that those apple districts which have been forging to the front in acreage and tonnage and in national reputation are those which are producing good quality varieties. It is also rather significant to note that the districts that have declined markedly in the past 20 years are those which planted very largely such varieties as the Ben Davis. True it is that summer and early winter varieties were over-planted at the expense of later keepers but it must be borne in mind that we have learned much about the packing and storage of fruit, that the season for better varieties has been continually extended, and while it is true that people like apple pie, a country visitor would be somewhat surprised to find what a large percentage of the large hotels and restaurants of our larger centers make their pies from canned apples, which are generally canned from the better varieties and are put up in gallon cans in huge quantities in New York, Michigan and the Pacific Coast.

We feel that the Ben Davis is a menace to apple consumption. Many growers sell it in the fall and it is often offered to the trade as early as October. "Peanut butchers" on our trains often sell Ben Davis through the fall and early winter, passing them off as being some better variety. Only comparatively recently a large quantity of Ben Davis were offered to the citizens of Washington, D. C., under the name of Winesap. We know of one buyer who last year thought he could take a lot of high-colored Ben Davis and repack them and mark them Delicious. Fortunately, he was warned that this was illegal; but such things have been done in the past. It seems to us that there is something wrong with an apple that has to sell under false colors. We believe that growers are not warranted in planting such varieties as Ben Davis, the present tonnage of Ben Davis is sufficient for our needs.

National Apple Week

NATIONAL Apple Week opens on October 31st, which is National Apple Day, and the celebration will extend for a week to November 7th.

National Apple Week has been celebrated for a number of years very successfully. The International Apple Shippers' Association has taken the lead in forcing the apple to the front on this occasion and much creditable work

has been done, especially in our larger consuming centers. Parades, prizes and many other acts have been done which would stimulate consumption.

Growers generally should take a great interest in apple week this year; we have a good crop of extra fine fruit. It will be large, well colored and of good quality and a little effort on the part of growers will greatly stimulate consumption at a very desirable time. Advertising campaigns can be well inaugurated at this period. Programs should be held in public schools and before luncheon clubs, such as the Kiwanis and Rotary. Women's clubs, commercial clubs and others too numerous to mention, should be interested in apple week. They should be told something about the extent of the industry, something about our better varieties, historic facts of interest should be told and especially should speakers dwell on not only the healthfulness of apples but the fact that the apple is a cheap, attractive fruit that for the amount of money for its food units, it is economical to purchase. It is rich in sugars, which are one of the most nutritious foods. Feature menus should be prepared for luncheons. Hotels should be interested in featuring apples in many ways during apple week. Window displays in grocery stores, fruit stands, etc., should be encouraged. The local press should be interested in a campaign and it is an opportune time for local growers to carry on extensive advertising through their local press. Fix up some banners for autos and trucks calling attention to the fact that this is apple week. Get your local merchants in their regular advertisements in the local press to insert a line or two on apple week. In some districts, schools and hospitals should be furnished with apples. Especially should disabled soldiers and sailors have apples during that week. The movie, which is one of the best means of publicity, can be interested in an occasion of this kind.

If growers will pull together hard much can be done to start a strong consumption of apples, which will extend throughout the entire season.

Apple Markets

WE have a most excellent crop this year, it is of fine quality. On the whole, apples will be clean, large and well colored. Growing conditions in the country at large have been most excellent. In our large consuming centers the buying power is very good at this time, evidences of prosperity are found on all sides. There has not been the bad slump in peaches, pears and early apples which occurred a year ago; there is not the tremendous oversupply of early apples which tends to bear down the price on later varieties. The British outlook is unusually good, as they have almost a complete failure and will import probably more fruit than for many decades.

Such a condition should mean a strong marketing activity, but, unfortunately, at this writing such activity does not exist. Buyers seem to feel that there is at least 17 per cent more commercial fruit than a year ago, although more recent figures would indicate that this is not so, but it seems to be an excuse at least for inactivity in the big marketing centers. Unfortunately, the bigger our fruit crop is the less effort is made to sell it. Possibly we can learn something from the manufacturing trade or from the banana and orange marketing. Possibly the time has come for the grower who has invested his all in his business, who has to fight the weather and destructive insects and diseases, to do a little thinking and perhaps a little experimenting. Possibly our marketing machinery as far as apples are concerned, has become inadequate and worn out.



Katherine blueberry.

LIKE many other gifts of nature which were once considered worthless but are now held in high esteem, the blueberry was, until quite recently, believed to be of little commercial value. One fine day, however, the owners of some rocky, abandoned Maine farms, awoke and found themselves in possession of veritable gold mines.

Such lands have since sold for enormous prices. Commercial plantings in the eighth year have yielded at the rate of 117 bushels per acre and the fruit sold for \$11 a bushel—\$1,280 per acre. Wild bushes have been known to live to the age of 100 years.

From the foregoing it will be seen that the blueberry offers large possible profits. It is, however, the most difficult of all berries to grow. It is most exacting in its requirements and will not succeed unless all conditions are favorable.

Needs Sour Soil.

In the first place, it will wither and die in rich, sweet soil, the kind in which other berries thrive. Blueberries demand a sour soil, the more acid the better. Lime affects the plants like poison.

Another unusual thing about the blueberry is that it gets its nitrogen by means of a mycorrhizal fungus, which grows on its roots. Like cranberries and unlike legumes, blueberries obtain nitrogenous food from non-nitrified organic matter.

A century of study and experimentation was necessary to place cranberry culture upon a profitable commercial basis. The problems connected with the propagation and culture

Growing Blueberries Commercially

by Hyatt Watts

of blueberries have been found similarly difficult, but have been successfully solved.

Buy Plants Carefully.

Credit for this important work is due chiefly to Dr. Frederick V. Coville, botanist of the United States Department of Agriculture, and Miss Elizabeth C. White of New Lisbon, N. J. The latter co-operated with the former in planting 27,000 seedling blueberries on 16 acres. A few of the best varieties thus developed were selected and given to nurserymen for propagation and sale, but the demand for plants far exceeds the supply. Unscrupulous dealers are selling inferior wild blueberry plants for high-quality hybrids. Buyers should, therefore, exercise due caution in purchasing blueberry nursery stock.

Like most fruits, the blueberry does not come true to seed, hence must be artificially propagated. Where budding or grafting is practiced numerous shoots come up from the root stock, rendering this method impracticable for field plantings. Cuttings may be

rooted in cold frames or greenhouses.

The best and easiest methods of blueberry propagation are "stumping" and "tubering." The former plan consists in cutting off the bush just above the ground and covering the stump with a few inches of sand. The new shoots which come up and send out roots into the sand are broken off and used for plants. The last named method consists of making short cuttings and burying them in sand, through which new growth pushes and is severed from the cutting, in much the same manner that sweet potato plants are propagated.

When Plants Bear.

Blueberry plants begin to bear when three years old, but do not produce full crops until five to ten years of age. It is necessary to plant two good varieties together for cross pollination.

A cranberry bog would be an ideal location for a blueberry patch. It is unnecessary, however, to remove the top soil and replace it with sand, which is the operation known to cran-



Typical blueberry bush.

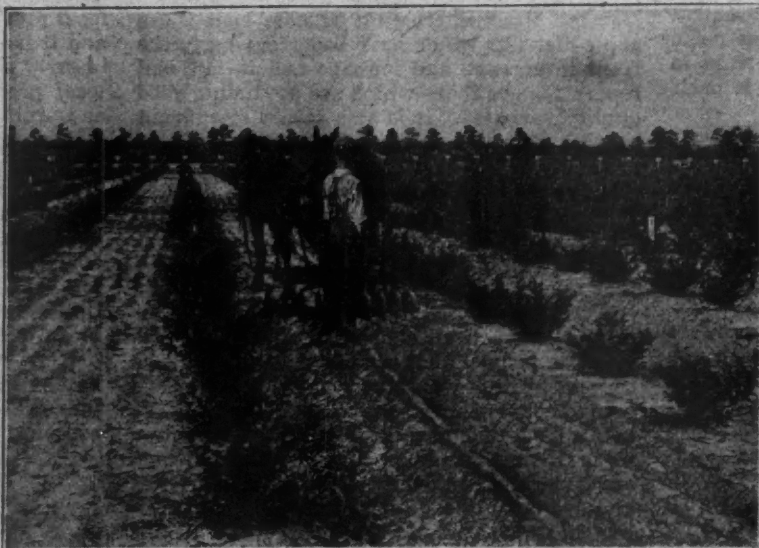
berry growers as turving. A sandy sub-soil overlaid with 6 inches of peaty soil is considered ideal blueberry ground. By plowing 8 inches deep a thin layer of sand is brought to the surface, constituting a sort of self-sanding operation.

Plenty of moisture is essential, but the water level should be at least a foot below the surface during the growing season. Deep cultivation is injurious, as the bushes are shallow rooted. Rotted peat, soy bean meal, nitrate of soda, dried blood, steamed bone, phosphate rock and potash are all considered good fertilizers. Pruning consists of the removal of old and weak shoots. The plants are set 4 feet apart in rows 8 feet apart and when the bushes crowd each other every alternate one is removed.

Western Blueberry is Different.

Efforts to transplant the blueberry on the Pacific coast were made by J. S. Dellinger of Astoria, but have not proved very successful. Prof. Coville suggests that failure may be due to the fact that chilling the plants by freezing winter temperatures is necessary for vigorous growth of the blueberry. It seems reasonable to suppose, however, that this fruit would become acclimated and adapt itself to the mild, equable Pacific coast climate.

From Alaska various reports have come of blueberries growing there in great profusion and perfection. Prof. (Concluded on page 17)



Cultivating the blueberry patch.

A Famous Indiana Orchard

by B. H. Doddridge

LOCATED 20 miles southwest of Madison, on the bluffs of the Ohio River, is the famous Dean apple and peach orchard at Marble Hill. This orchard which is now owned by ex-State Representative Charles E. Dean has been run by the Deans for a number of years. The early history of the Dean orchard is of interest since it was one of the largest orchards in the Middle West.

In 1852 Argus Dean, father of Charles E. Dean, came to Jefferson County and opened a stone quarry at Marble Hill. The stone quarry did not prove practical, therefore, he turned his interest to the care of fruit. The fruit business gradually increased and in 1871 a peach store was started in Cincinnati, Ohio, to handle the crop and later an additional store was started in 1880 at Chicago, Illinois. By 1892 Mr. Dean had 1,000 acres of land in peaches.

Bumper Peach Crop.

The bumper peach crop grown by Argus Dean was in 1893 when he marketed more than 70,000 bushels of peaches. The gross returns from this crop were a little better than \$90,000. A large per cent of these peaches were handled through the fruit stores operated by Mr. Dean in Chicago and

Cincinnati. They were marketed in containers made from Linden and other native trees. These boxes were 15 inches long, 6 inches deep and 8

inches wide, large enough to hold one peck of peaches. However, it was found more convenient to nail two boxes together and thus enlarging the



Twenty-six-year-old apple trees which have received one cultivation.

package so that it contained one-half bushel of fruit. During this early period there was a large waste in handling peaches as they were shipped in ordinary freight cars and refrigerator cars were not used. The peaches were loaded on the boat at Marble Hill and shipped to Madison, then transferred to cars and shipped to the receiving stations. Some of the peaches were transferred to Cincinnati and Louisville by boat. However, it was too slow to get the fruit on the market in good condition.

Charles Dean, who is now operating the orchard, ran the commission house in Cincinnati until 1900 and about that time the orchard began to decline. The cause for this decline was twofold, namely, prices of fruit were low and the fruit was more or less inferior, due to the fact that it was not sprayed.

Argus Dean also devoted some attention to the manufacture of apple cider. The apples he grew for this purpose were the Hughe's Virginia Crab. A large cider mill was erected on the farm in 1890. This mill contained a power press which had a capacity of 25,000 gallons per day. Through this mill they were able to get 4 gallons of cider per bushel (Concluded on page 23)

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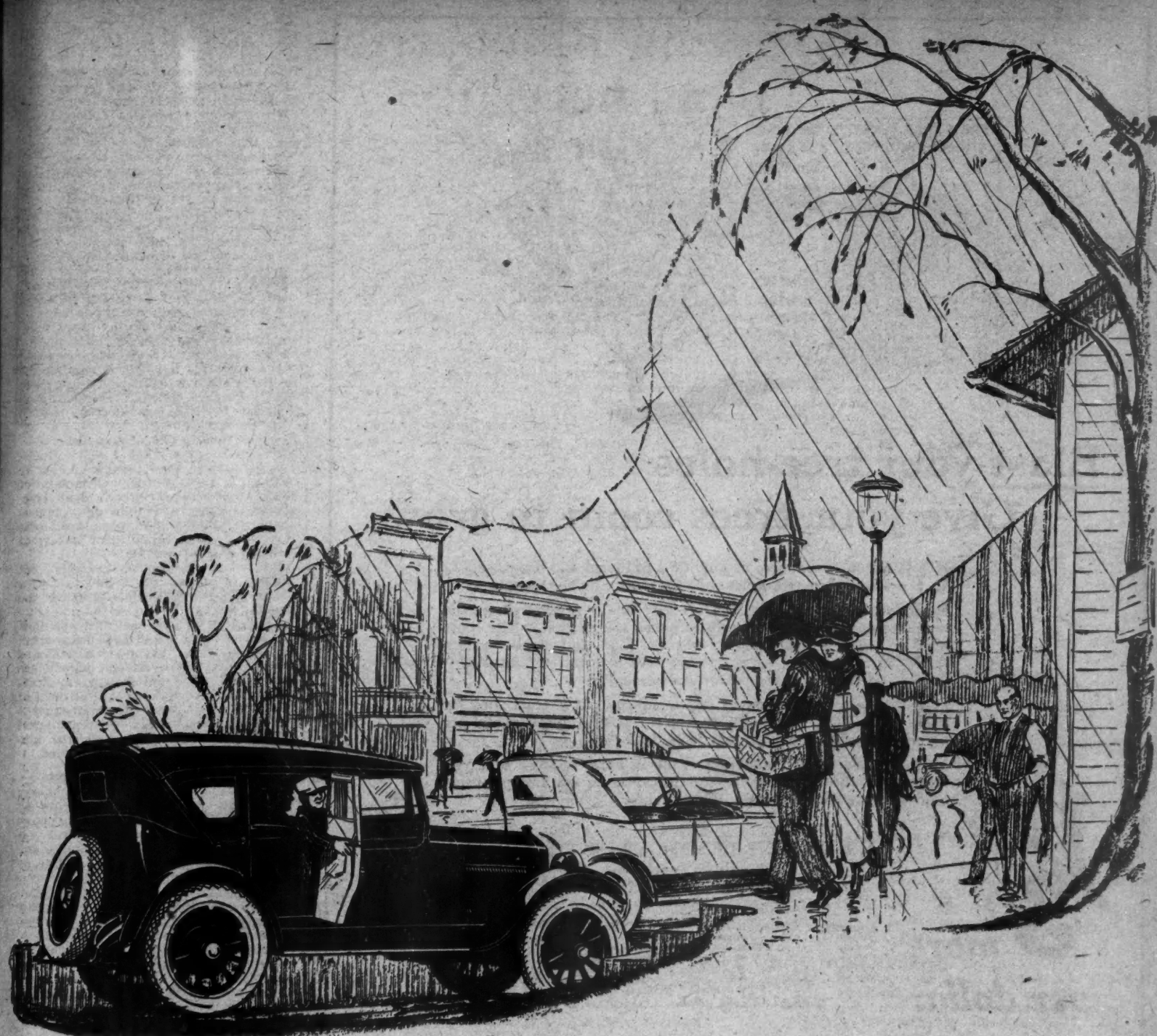
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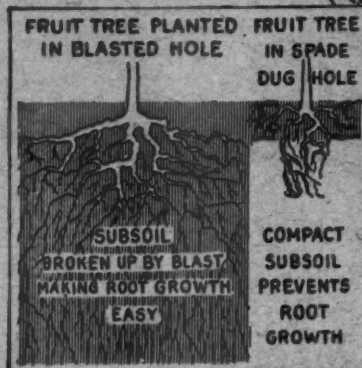
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Western Scientists Meet

by Gordon G. Brown

THE sixth annual meeting of the Northwestern Association of Horticulturists, Entomologists and Plant Pathologists was held in Boise, Idaho, on July 23rd, 24th, and 25th. This is an organization made up of and attended by research men from Oregon, Washington, Idaho, Montana, Utah and British Columbia. Its purpose is to exchange latest thought in investigational work. This year's meeting was unusually well attended and much good was accomplished. In addition to the presentation of papers, the work was supplemented

by round-table discussions and field trips to different orchards and farms. Such demonstrations are interesting and forceful.

During the three-day session more than 40 subjects were discussed. Those referring to pruning, fertilization and spraying commanded greatest attention. The control of alfalfa weevil as discussed by Professor Wakeland of the University of Idaho, indicated that spraying with calcium arsenate is both effective and practical. At the height of the hatching season which is about three weeks be-

fore the first cutting the field is sprayed thoroughly. A second spray is also applied to the first crop. A power sprayer using 250 pounds pressure is employed and approximately 2 pounds arsenate per acre is consumed. Costs are about \$1.44 per acre for both sprays. Experiments show that hay thus sprayed is safe to feed and that quality and quantity are improved, especially on later cuttings.

That the use of nicotine dusts is practically an unexplored field was indicated by Professor Lovett of Oregon. His paper indicated the effectiveness and convenience of such applications as compared with liquid sprays, especially for low growing truck crops. Nicodust and other such combinations are especially effective. A 5 or 6 per cent mixture controls Pear

and Prune Thrips; also Apple Aphid. Against Woolly Aphid it is not effective, owing to the protective woolly covering of this insect. A 6-10 per cent mixture controls leaf hoppers. The effectiveness of dust sprays is largely influenced by the carrier employed; those especially colloidal in character absorb much of the nicodust and thus reduce its effectiveness. That such sprays must be kept in tight containers if held for some time before using was emphasized. A limiting factor as yet is the almost prohibitive cost of nicotine. Hot weather, dry foliage and no wind are necessary combinations for dust sprays.

Professor Downs of British Columbia reviewed experimental work with reference to Strawberry Root-Weevil Control. This pest threatens to wipe out strawberry growing in the Northwest. The need of rotating crops was emphasized. Potatoes should be planted before setting strawberries because the weevil does not live on this plant. In this manner a clean field is started with. Further control depends upon keeping weevils out of the patch. This is accomplished by the use of barriers constructed around the field. This consists of a plank 2 inches thick and 14 inches wide placed edgewise and sunk a couple of inches in the soil. In the upper edge a V-shaped groove 1 inch wide and $1\frac{1}{2}$ inches deep is made. Planks are set level and kept filled with a light oil such as Star and Imperial fuel oil. Adult wingless weevils are killed in coming in contact with this oil. On steep hillsides a tanglefoot barrier is employed.

The use of a combined Bordeaux and oil spray was discussed by Leroy Childs of Hood River. The advantage of such a combination lies in the fact that the spreading and adhesiveness of the copper is greatly increased. Miscible oil is used in early spring for Leaf Roller and Bordeaux in the Fall for Anthracnose. Owing to the busy season in autumn incidental to harvesting and early rains, growers often fail to secure control because of too late spraying with Bordeaux. When this is combined with oil in spring, one spray may be eliminated since the copper is known to remain on the tree for nearly a year, in sufficient amounts to insure Anthracnose control in the fall.

Clayton L. Long of Corvallis, discussed the merits of the so-called "Long Arm Pruning." Heavy heading back of leaders in fruit trees was discouraged since yields are lessened and trees structurally weak result. "Long Arm" pruning is especially popular in California and in parts of the Northwest.

Brown of Hood River, discussed "The D'Anjou Pear with Reference to Pruning and Fertilization." This variety is often a shy and tardy bearer. That pollination is a strong factor was hinted at. D'Anjou's planted near Easter pears were observed to be especially fruitful and regular croppers. Demonstration work was conducted at Hood River with eight and sixteen-year-old D'Anjous. In the latter case trees were planted as close as 20 feet apart on the hexagonal. Fertilization with nitrate of soda and heavy pruning resulted in yields increasing from less than one box to over 12 boxes per tree. Unpruned trees eight years old are not only larger but bearing heavier crops than trees of similar age either winter or summer pruned. Results show that ample fertilization, sunlight and moderate growth are associated with most consistent and heavy cropping of this variety.

Other papers of interest were: Cherry Pollination, by C. E. Schuster; Diseases of Brambles, by S. M. Zeller; Potato Leaf Roll and Mosaic, by Hungerford; and Potato Certification by E. R. Bennett of Idaho.

Uncle Silas says the two prettiest things in all the world are a woman in a white dress and a red wagon with green wheels.

We pray for rain weeks on end and then grumble at the bad weather the second day after the drought breaks.

Crop Report

GARDNERS' Chronicle of England states that Great Britain and Ireland today have the poorest prospect of a fruit crop on record, even the Channel Islands having a poor crop. Pears, plums, peaches and apples all set poorly and shed heavily, resulting in an extremely light crop.

The apple figures furnished by the government are slightly under those of a month ago, caused partly by the fact that the New York crop is showing up poorer than earlier predicted. There is also considerable shrinkage in the pear estimates, they now being 14,942,000 bushels. Peaches also show a shrinkage of a million bushels over earlier estimates, the figures now being 47,372,000 bushels.

On the whole there is a fair grape crop in the country, nearly a normal crop being expected. Western New York and Pennsylvania will have less than a year ago. Michigan expects to ship somewhere between 5,000 and 6,000 carloads, their tonnage last year being 6,200 cars. The carloads of eastern grapes shipped from the Chautauqua and Erie belt for the past 23 years is as follows:

Year.	10-ton cars.
1900	8,000
1901	6,669
1902	5,062
1903	2,952
1904	7,479
1905	5,362
1906	5,364
1907	5,186
1908	4,323
1909	7,561
1910	5,700
1911	8,100
1912	7,528
1913	3,959
1914	8,386
1915	7,072
1916	7,307
1917	4,797
1918	2,067
1919	4,921
1920	5,350
1921	1,876
1922	7,857

Estimates vary tremendously for the California crop, some figures from that state surpassing some 60,000 cars while others figure that the crop will be about 50,000 cars as compared with 43,663 cars shipped in 1922.

A Misnamed Island

GRAPE fruit, not pineapples, is the main export of the Isle of Pines. Grape fruit is the principle product of the Isle of Pines, says Consul Charles Forman, Nueva Gerona, in a report to the Department of Commerce. The importance of the industry dates from the American colonization shortly after the Spanish-American war. American farmers introduced new varieties of grape fruit from Florida and elsewhere, planted groves, and built packing houses. Modern methods of cultivation and packing are used, and a considerable industry has been built up. Most of the growers are American settlers.

The Walters is the leading variety, although others are grown. Soil and climate are favorable, and the quality of the fruit is excellent.

United States the Principal Market.

The bulk of the crop is marketed in the United States. The fruit which ripens in time to ship from early August to the end of September is designated as early fruit. This fruit brings the best prices, as it comes on the market before Florida grape fruit is ready to ship. The entire season, however, embraces the period from early August until about June 1st of the following year.

Consular invoices show that 176,802 cases of grape fruit were shipped to the United States during the 1920-21 season, 152,480 crates during the 1921-22 season, and 229,321 crates during the 1922-23 season. During the last season several thousand crates, not covered by consular invoices, were shipped to Canada and England. Shipments to England were undertaken for the first time this season and were quite successful. Shipments to Canada also were satisfactory.

THE California Canning Peach Assn. handled 194,000 tons of peaches last year.

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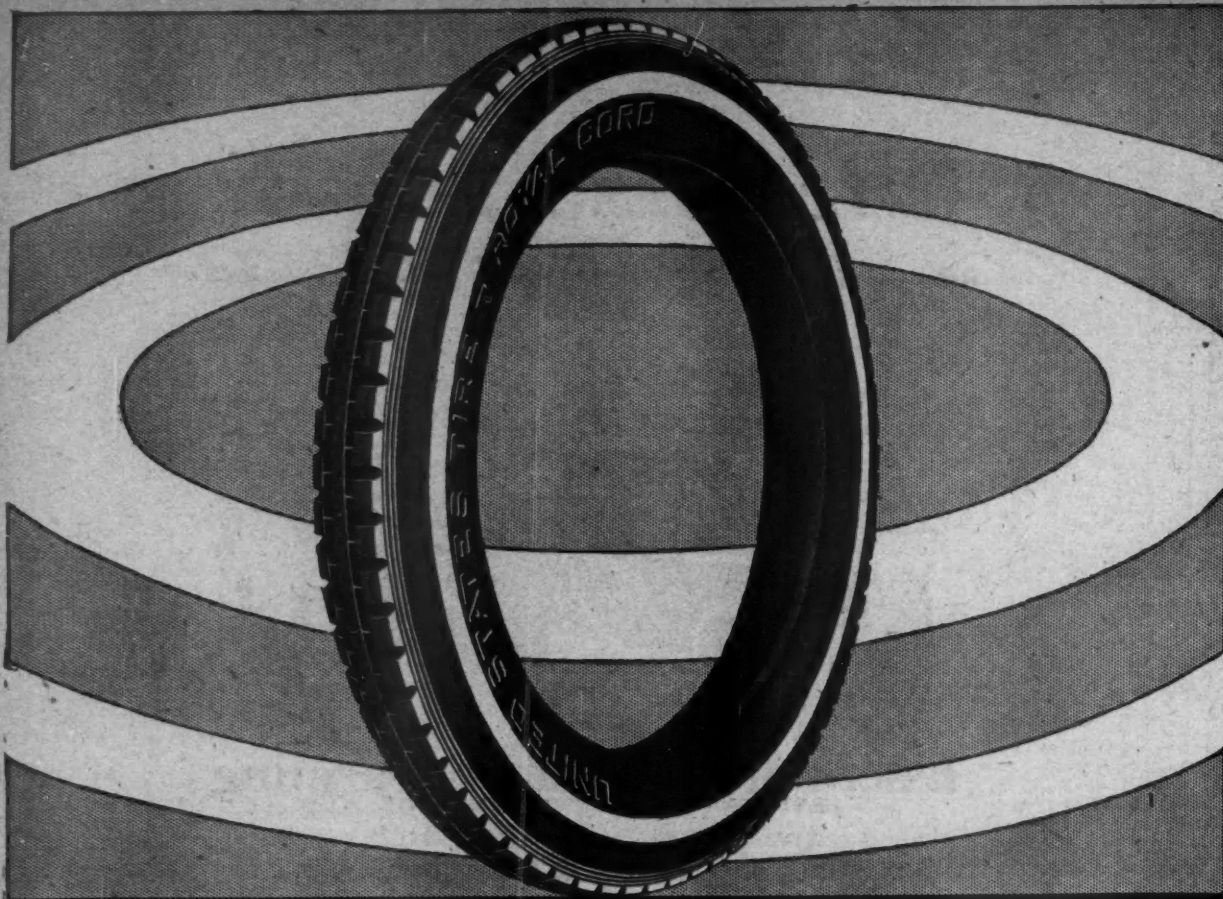
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Fruit Growers Make Orchard Tour

by H. H. Swaim

THE tour of the fruit growers of Indiana, through the orchards of Lawrence County, August 8th and 9th, was both enjoyable and instructive. The hearty co-operation of the local people made possible the success of the tour. The towns of Bedford and Mitchell were suitably decorated, and the Kiwanis and Rotarians furnished automobiles for the trip.

The first stop was made at the Purdue farm, 6 miles west of Bedford, where the forenoon was spent investigating the work being done by the

Purdue Horticultural Department. An object of especial interest here was the new air cooled storage house, built last year. This structure has proven highly satisfactory as a fruit storage and enabled the farm manager, E. V. Moore, to dispose of a crop of 9,000 bushels of apples at the farm last year. The principle of construction of this house is such as can be used by any farmer or fruit grower, and has been duplicated by the Holmes Orchard Company where we visited the second day. The Ladies' Aid Society of Bedford served lunch from this new packing house to about 500 fruit growers assembled here.

From here we went direct to the

Stonington orchard of the Indiana Quarries Company, where we found extensive peach orchards, loaded with perfect fruit, growing upon a hillside, which many would consider too steep to cultivate, but all under clean cultivation. A part of these were planted as fillers for a large apple orchard.

As we returned from this orchard to the experimental orchard, formerly under the care of the Indiana Horticultural Society, we made a brief stop at the Donaldson Cave, which was an interesting sight to the majority of the visitors from over the state. The volume of cold air pouring from the mouth of this cave was such as to suggest to Uncle Joe Burton that

there was cold storage enough there for all the apples in Indiana.

The Turley Tree.

At the experimental orchard, which is now under the control of Purdue University, we visited the original Turley apple tree. This apple is a seedling of the Winesap, produced while the orchard was conducted by the Horticultural Society, with Mr. Burton as manager. It is a promising variety. In appearance it is hardly surpassed by any apple, is larger than its Winesap parent, much better as a dessert fruit, but with possibly not as good keeping qualities. It bids fair to some day take its place among important commercial varieties.

A very marked demonstration of the value of fertilizer was shown at this place.

The next and last stop for the day was at the famed Paul Rose Peach and Cherry orchard. The owners of this orchard have sought continuously to build up a reputation for high quality fruit, with the result that their produce brings the highest price on any market where it is offered.

At the evening meeting, held in the Bedford high school assembly room, we listened to interesting addresses by D. E. C. Elliott, president of Purdue University, G. I. Christie, director of the Purdue University Experiment Station, W. H. Stiles of Henderson, Kentucky, and others.

Dusting Demonstration.

At the first stop, the morning of August 9th, E. V. Hawkins, manager of the Hobbs Hawkins Orchard Company, gave a demonstration of dusting, which was of interest to the tourists. This young orchard of 4,000 apple trees, just coming into profitable bearing, and carrying a splendid crop of fruit this year, and 6,200 peach trees, of different ages, had the best of care from the beginning. Mr. Hawkins believes in thorough cultivation and keeps the tractor going with disk and harrow.

At the next stop at the Holmes Orchard Company, we found almost a duplicate of the Hobbs Hawkins Orchard, as concerned the apple trees, but with a smaller planting of heavy peaches. This orchard is also loaded with as clean perfect fruit as one will find anywhere. Mr. Holmes has grown alfalfa in the bearing orchard for several years and mulched around the trees. Here we saw the fruit storage house before mentioned, in process of construction. Mr. Holmes expects to have it ready for use at apple picking time, and has already installed grading and packing machinery.

Leaving this place, our next stop was made at the 40-acre orchard of Robert Troth, near Orleans. This orchard is not yet in bearing, but gives promise of great things for the future. Mr. Troth is a real orchardist and has been in the business for many years. A fine crop on his older orchard, adjacent to this, is proof that he understands the business.

The orchard of Harry Elrod is perhaps the most unique in its management of anything we saw on this tour. It is planted in an alfalfa field and has been fed upon alfalfa its entire life, the trees being heavily mulched with the hay cut from the orchard. They have made a wonderfully fine growth, and are now just beginning to show indications of bearing fruit. The future of this orchard will be closely watched by the fruit growers of Indiana.

Last, but by no means least, we visited the Burton Fruit Company extensive orchard. Here again we found an abundance of fruit. Here also we saw the most extensive equipment of orchard machinery, the preparation of spray material and their mixing, loading of sprayers with a special air pressure tank; even a machine for pulverizing the prunings for use as mulch was found among this equipment, and was demonstrated by the manager, Turley Burton. This is probably the most extensive orchard equipment to be found in the middle west.

Throughout the trip, at every stop we found refreshments of some sort.

The Ben Davis

THE "Ben" is again in favor with southern Illinois fruit growers. There was a period extending from about 1912 to 1920 when the variety was so unpopular that little mention was made of it at meetings except to speak of its many faults. Growers who contemplate plantings of late apples just now are planning to include Ben Davis in the list.

The Ben Davis is found growing commercially over a much greater area than any other apple and up to 1915 was the leading commercial variety grown in Virginia, West Virginia, Kentucky, Tennessee, Illinois, Missouri, and Arkansas. Its highest development was reached in Southern Illinois, Missouri, and Arkansas where easily 75 per cent of the late apples in bearing a few years ago were Ben Davis. The variety is subject to nearly every ailment to which the apple is heir, and in addition is classed by most people as being of wretched quality. Even so when production of well grown Bens began to decline it was noted that good Bens were in demand and this condition obtains at the present time. It is hard to grow Ben Davis of good color and size free of insects and disease and free from the effects of spray material. The skin of Ben Davis is easily injured by Bordeaux, or in some seasons by lime sulphur and in seasons of excessive precipitation is rather seriously "weather russeted." The tree is very susceptible to blister canker, which is the limiting factor in production. Young, healthy and vigorous trees are not attacked badly, but plantings 30 years of age and neglected quickly become unproductive and succumb to ravages in the beginning of the disease. Growers believe that by careful fertilization and the application of correct pruning methods the losses due to blister canker can be largely eliminated.

In its favor the Ben Davis has a record of production unequalled. It bears early and usually annually and heavily. The fruit is of good to large size even on old trees and if handled properly the fruit is of a brilliant red color. Much of the disfavor into which Ben Davis has fallen is due to the self-sterile flowers. Early plantings were in solid blocks, consequently unless weather at blooming time is favorable for pollination the variety for use sets very poorly, if at all. The origin of this apple is unknown but has been credited by various writers to Tennessee, Kentucky, and Virginia. That it originated about 1800 is evident because it had been disseminated widely before the Civil War. It is possible that with a better knowledge of cultural practices the Ben will grow in favor, because it fills a place on the market not held by any other variety. It is a splendid cooking variety, and up to date there has been recorded no waning popularity in apple pie.

Of the Gano and Black Ben Davis (seedlings of Ben Davis) there is little to be said. Both are credited with better quality, but on the market do not demand a premium over Ben Davis. Since the trees are no healthier and the fruit quite as susceptible to blotch and scab, it is not likely that these varieties will outstrip the parent.—Ill. State Hort. Soc. News.

Walnut Drying

WALNUTS should never be allowed to become mouldy and covered with mildew on the outside. When they are in this condition, it is generally true that the kernels also are becoming mouldy and worthless. In drying English walnuts it is better to not let the temperature go above 90 degrees and not below 70 degrees. A temperature above 90 degrees is dangerous, causing a breakdown of the oils and loosening of the seams of the shell. A temperature of 70 degrees and lower will encourage the development of mould. About 48 hours continuous drying is generally sufficient.

DODGE BROTHERS TOURING CAR

The comfort and beauty of this new touring car are instantly apparent.

Long underslung springs, deeper seats and greater body length have resulted in an unusual degree of riding ease.

The body is exceptionally trim and graceful. Swung low to the road, with long, straight hood-and-cowl effect and tasteful appointments, the car reveals new value and sound workmanship in every detail.

The engine—which remains essentially the same—needs no eulogy. It has proved its power and economy to nearly a million owners.

The price is \$880 f. o. b. Detroit



The Truth About Railroad Valuation

For many years it was charged the railways of the United States were "overcapitalized".

The Interstate Commerce Commission in 1920 placed upon the railways a "tentative" valuation of \$18,900,000,000. This was \$1,500,000,000 more than the bonds, stocks and other securities they had outstanding in the hands of investors.

The valuation has since been attacked as excessive by the same persons who previously attacked the capitalization as excessive.

Senator LaFollette's Valuation Law

What are the real facts about valuation? Congress in 1913 passed a law directing the Interstate Commerce Commission to make a valuation of all the railways. Its author was Senator Robert M. LaFollette of Wisconsin. He estimated the valuation would cost two and one-half million dollars. It has already cost the government 24 million dollars and the railways 66 million dollars—total, 90 million dollars.

How the Valuation Was Made

The Transportation Act of 1920 directed the Commission to make a "tentative" valuation as a basis for regulating rates until the final valuation could be completed.

It has been charged this tentative valuation was based upon stocks and bonds. E. E. Clark, then Chairman of the Interstate Commerce Commission testified before the Senate Committee on Manufactures in January 1921: "Stocks and bonds were not considered at all. It is the fair value as closely as could be estimated and approximated at that time of the physical property which was devoted to the transportation service." Henry C. Hall, a member of the Commission, testified before the Senate Committee on Interstate Commerce on January 5, 1922, that the commission used the information it had gathered under the LaFollette Valuation Law of 1913.

It has been claimed the valuation was based on the high cost of labor and materials in 1920. Chairman Clark testified: "The principal figures used in our valuation are as of 1913 and 1914." The wages of labor and prices of materials in these years were not half as high as in 1920.

An Argument for Confiscation

It has been claimed the valuation should be reduced because it exceeded the market value of railway securities on the Stock Exchange.

The Interstate Commerce Commission was not authorized by either the LaFollette Valuation Law or the Transportation Act to consider the market prices of securities. Their prices, like those of wheat and corn, rise and fall constantly, and in 1920 were the lowest in history after the government had operated the railways at a heavy loss and returned them to their owners incurring a huge deficit. For the government to base a valuation upon prices of securities made so low by the way the government itself managed the railways would be the most colossal and indefensible act of confiscation ever committed outside of Russia.

The valuation has been criticised because it was not based solely on what it cost to build the railroads.

This is one of a series of advertisements published to give the farmer authentic information about railroad matters. Any questions that you would like to ask will be cheerfully answered. Address:

WESTERN RAILWAYS' COMMITTEE ON PUBLIC RELATIONS

650 Transportation Building, Chicago, Illinois

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Chicago Great Western Railway,
RALPH BUDD, President,
Great Northern Railway,
H. E. BYRAM, President,
Chicago, Milwaukee & St. Paul Railway,
W. H. FINLEY, President,
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I. E. GORMAN, President,
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HALE HOLDEN, President,
Chicago, Burlington & Quincy Railway,
C. H. MARKHAM, President,
Illinois Central Railway,
C. E. SCHAFF, President,
Missouri-Kansas-Texas Lines.

The railways of the United States have been in course of construction and development for almost 100 years. In this long period many records have been lost, destroyed by fire and otherwise become unavailable. Therefore, the actual cost of many roads cannot be ascertained. Furthermore, the Supreme Court of the United States always has held that in the valuation of a railroad or public utility, what it would cost to construct it at present, as well as what it actually has cost, must be considered.

What the Railways Are Seeking

It has been claimed the railways are seeking a valuation of 30 to 35 billion dollars. All the railways ever have asked is that any valuation made shall give to railway owners the protection from confiscation guaranteed to owners of every kind of property by the Constitution of the United States.

Railways' Net Return Less Since Valuation Was Made

It has been claimed the valuation and the net return the railways have been allowed to earn on it have been the reason why rates have been higher than before the war.

Higher rates have been made necessary entirely by increased operating expenses, principally wages and taxes. The railways have earned less net return since the valuation was made than before. In 1916 and 1917, the last two years before government operation, the net return earned by them averaged over 82 million dollars a month. Since the valuation was made their net return has averaged less than 60,000,000 dollars a month.

Valuation and Rates

It has been claimed a large reduction of the valuation would make possible a large reduction of rates. But operating expenses and taxes which are costing 85 cents out of every dollar the railways earn would not be affected at all. If one-third of the valuation were arbitrarily wiped out the resulting permanent reduction of the net return the railways were allowed to earn would bankrupt many of them and stop railroad development; but this reduction of one-third in the valuation could not possibly make a difference of more than 5 per cent in rates.

Why Valuation Is Important

From the standpoint of rates the question of valuation is comparatively unimportant. From the standpoint of railroad development and service it is vital. Upon the valuation finally made will depend the net return the railways will be allowed to earn and their ability to raise new capital and expand their facilities. Upon their ability to expand their facilities and render increased transportation service will depend whether the farmers and other producers and shippers will be able to do a prosperous business in future.

Filbert Growing

(Continued from page 8.)

better chance to establish themselves before the hot weather comes on and the heavy demand for moisture is being made by the top of the tree.

The Suckerless Tree.

A. M. Gray of Milwaukie, Oregon, has developed a system of planting that reduces to a minimum the trouble of removing the suckers. The one-year-old layers are grown in the nursery for one year, by which time the main roots are well established. In setting in the field, the crown of the tree is held above the ground. Mr. Gray puts a stick across the hole that has been dug to receive the tree and sets the tree astride this stick. The roots are put well down in the hole, so that they will be placed in moist dirt. The hole is then filled up in the customary manner and the stick withdrawn. This places the crown of the tree well above the surface of the ground, though as a rule for the first year dirt is heaped up over the base of the roots so as to avoid too extensive drying out. Since the suckers come from the crown of the tree and not from the roots, the part producing the suckers is above the surface and suckers are easily removed as they develop. This has started the idea of the suckerless tree, though it is in no sense a suckerless tree, but one from which the suckers may be easily removed. How it will turn out and how it will affect the tree by having it planted in this manner, is yet to be seen as but few trees have been planted in this manner.

No matter in what manner they are planted, just so they are not planted too deep, the removal of suckers is a relatively easy proposition if followed consistently from the first. At the Oregon Experiment Station there is a planting of filbert varieties. At first the suckers were well kept down so that in later years when experimental work showed that certain of these varieties were valuable and it was desirable to propagate from them, it has been difficult to get new trees from them as the trees were suckering but very little. As soon as the new suckers have grown to a length of 4 to 6 inches they can be jerked or twisted off easily, and if this is done carefully from the first, the suckers can be easily kept down. However, if they are allowed to develop and obtain a good growth through one season, the work is rather costly and expensive and particular care must be taken to remove the sucker entirely. Once a sucker has developed and only partly removed you have ideal conditions for the development of more suckers as new ones seem to develop more rapidly on this basal wood than on any other wood we have around the tree.

Method of Propagating.

Up to the present time very few plantings have been kept clean of suckers as the growers were generally propagating as heavily as the tree would stand. For the development of trees layerage is used almost entirely. Seedlings are useless with this fruit as with any of our other fruits. Neither are seedlings raised to any extent for grafting stock as budding and grafting are both very difficult. Some experiments are being carried on at the present time with the use of Corylus Columna as a stock for filbert trees, as this species does not sucker. If budding or grafting is successfully worked out we hope to get a suckerless tree in this manner. As a rule the continuous layerage is uniformly used to raise young trees. A sucker is staked down along the ground and as the shoots developing from this layer attain a length of 3 to 4 inches, the dirt is heaped around the shoots. This is continued until the dirt is heaped around them to a depth of 5 to 6 or even 8 inches. By fall or early winter roots will be found to be well developed and plants are ready to dig. By this method it is possible to take 50 valuable trees from an older tree that will at the same time bear from

20 to 35 pounds of nuts. Too heavy suckering and propagating though is weakening on the trees, but with the present price of filbert trees it pays to produce young trees even at the risk of setting the bearing tree back a year or two. Trees for the past season or two have been selling for 50 cents each. Some of the more scarce pollinizing varieties have been going at higher prices than this, but 50 cents may be taken as about the average price for No. 1 stock.

The growers of the Pacific Coast have pretty well settled on one variety for commercial planting. The Barcelona leads all other varieties in the numbers being planted. It has several admirable qualities that place it at the head of all the varieties that we have tested out up to this time. The tree is a vigorous grower and produces well. The nut is fairly large and has a characteristic of dropping free from the husk. When compared with some of the varieties that must be husked by hand, this would seem to be quite an advantage. The quality of the nut is almost as good as any of the others, although we find a few, such as some of the Avelines, that will excel it in quality.

Are Self-Sterile.

Filberts are quite similar to sweet cherries in one characteristic, and that is that they are all self-sterile and some are also inter-sterile. Fortunately the more commonly found varieties will pollinize the Barcelona. From tests made over a period of three years it seems advisable to use two or three pollinizers, if possible. The Barcelona has an exceptionally long blooming season, the flowers appearing at different times. Many of the later varieties of filberts will bring out all the flowers at one time, but the Barcelona blooms early and late. For an early pollinizer, we find that the White Aveline is about the most successful. This variety produces too poorly and is too difficult to husk to be considered other than a pollinizer. For mid-season pollination, we find the Daviana and Nottingham the most successful of all that we have tested. For the later blooms, the DuChilly will prove the most successful. Of all the pollinizers, the Daviana and the Nottingham have proven the best. The White Aveline, DuChilly and Daviana can quite commonly be found but the Nottingham is very scarce as yet. Many other varieties have proven good pollinizers but these three are more generally distributed due to the fact that they were included in the first plantings made in the state and on that account more trees can be sold and produced than with the others that have just recently been brought out. Many of the other pollinizers are seedlings and have no advantage over the ones just listed. If this combination is used in the planting, we find that the ones planted to pollinize the Barcelona will pollinize each other, so that the crop will be more general over the whole planting. None of the varieties used for pollinizing purposes will compare with the Barcelona in bearing or in the total income produced per acre from the crop.

The pollinizers should total 11 per cent to 16 per cent of the plantings. This means that every third tree in either every third row or every second row should be a pollinizer. In most cases 11 per cent will do the work but it seems that the abnormal season is the rule and it would appear to be the wisest course to put in an abundance of pollinizers and use one in six. With this number we know we are safe and it is better to be safe than sorry later on.

Plenty of Moisture Needed.

Many people think because the fruit is a nut that moisture is not very important to the crop, but as with other crops, the vigor of the tree and the size of the nut are partly dependent on having plenty of moisture in the soil throughout the season. Let the soil dry out and the nuts will be small and poorly filled and of poor quality. Cultivation throughout the season is necessary in most sections and especially so in a place like western Ore-

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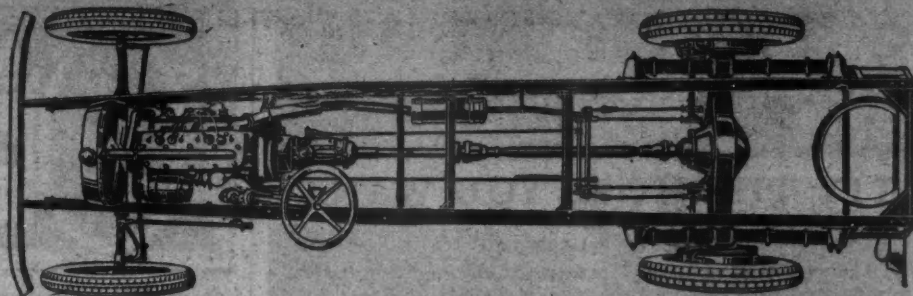
Pruning has been one subject about
which very little has been said. In
England the pruning has been very
severe. Heavy cutting back in the
winter has been followed by summer
pruning so that size of the trees has
been kept relatively small and the
trees have been held in close. In this
country pruning has been conspicuous
by its absence. Since filberts general-
ly bear laterally on one-year-old
shoots, new growth must be kept
coming in each season. Some may do
this by a modified type of pruning as
has been practiced with the peaches,
or even by heavy cutting. However,
the aim should be to keep the tree
growing and new wood coming in by
good cultural practices rather than by
severe pruning. If the fertility is kept
up properly the growth will be main-
tained so that heading back will not
be necessary. Only a pruning that is
composed of thinning out will be
necessary. A filbert tree quickly be-
comes dense due to the many short
growths made on one-year-old shoots.
If this growth is all left in, the inner
bearing wood is easily killed out from
the lack of sunlight. Thin out the
tree so that the light can get into
all parts of the tree and have the trees
bearing nuts all the way down to the
trunk, for the filbert will do this if
properly handled. A filbert is very
apt to put out new growth on wood
10 to 15 years old, and the new
wood will soon bear when there is
plenty of light reaching it. A combi-
nation of good cultural practices and
thinning out of the excess wood will
keep the trees growing and bearing
well. This will eventually make a
large tree, but a large tree has plenty
of bearing surface, and bearing sur-
face together with proper nutrition
produces the best crops.

Some Yields.

One may ask what will be the ulti-
mate yields per acre. No one in this
country knows definitely what the
tree actually will bear, for there are
very few mature plantings. Of all
the plantings we find but very few
that are over 15 or 20 years, and
these are so small and so closely
planted that they will furnish no
definite data. J. C. Nibler of Wood-
burn, Oregon, has a grove of about
an acre, and from the ninth year to
the thirteenth year it has not pro-
duced less than 2,000 pounds of fil-
berts annually, except for the year in
1920 when the crop was a failure due
to the heavy freeze of December, 1919.
When it comes to individual trees the
records are too good to be of any use
in calculating acreage yields. In the
fall of 1922 the writer picked 50
pounds from a fifteen-year-old Barce-
lona tree that had been hand polli-
nated. Then to check up with this
on a different aged tree, representa-
tive trees were chosen five and nine
years of age. A five-year-old tree gave
7 pounds of nuts, while a nine-
year-old tree produced 20 pounds.
In England the growers figure on a
thousand pounds an acre year in and
year out. If we figure that, counting
in all the bearing acreage, we can
produce a thousand pounds of nuts an
acre on the average, good, bad, and
indifferent seasons, we will not be
very far off. This means that many
of the better groves will produce bet-
ter than 2,000 pounds on the average,
but it can hardly be expected that the
total plantings will average that well.

Harvesting.

Filberts are picked from the ground.
The market in this country does not
demand them in the husk, so they are
allowed to ripen fully and drop. It
costs about a cent and a half to two
cents to pick them up. Drying them
takes but very little heat. They are
generally spread out to dry in a warm
place, but few are dried in an artificial
dryer. They need some drying to
avoid molding, but on the other hand
too much drying is just as bad. In
the ordinary room the kernels soon
become dry and hard, losing a large
amount of the effective flavor so pleas-
ing in a fresh filbert.



A Good Truck Made Better

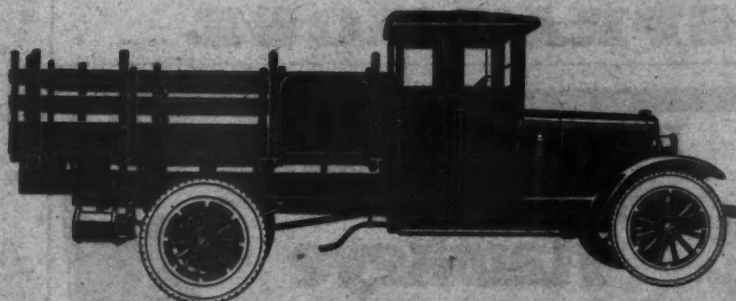
Visit your Dodge Brothers Dealer and note the
latest improvements in the design and construc-
tion of Graham Brothers Trucks.

Improved rear springs and rear axle, stronger
and wider chassis frame, metal running boards,
front bumper, new type front fenders, improved
brakes, tire carrier on rear of frame, increased
comfort in seat cushions,—these and other re-
finements add materially to the life and stamina
of an already rugged and dependable truck.

Anyone who has a haulage problem should look
carefully into the merits of this truck, and com-
pare its appearance and performance with trucks
that cost much more to buy and operate.

1 Ton Chassis \$1265; 1½ Ton, \$1325;
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GRAHAM BROTHERS TRUCKS

SOLD BY DODGE BROTHERS DEALERS EVERYWHERE

The prices of filberts vary some-
what, but are usually about on a par
with that of the walnut. This in the
past season ran from 17 to 30
cents a pound, depending in most
cases on the methods by which
they were marketed. Men with a
reputation for good nuts and close by
a good market obtained 30 cents
from the retail trade, but usually the
grower's price was a little lower than
that. The filbert will never be a fruit
to be grown for high returns, but rather
one for a moderate, constant in-
come. Without any necessity for
spraying and with a low harvesting
cost it presents an attractive venture
for many people who prefer a steady
and moderate income to a possibility
of a high income but with a relatively
high outlay in order to produce this
high income.

Growing Blueberries

(Continued from page 10.)

Coville says these berries are the
same as those which grow along the
Oregon and Washington coasts; the
tall species being the *Vaccinium ova-
lifolium*, bearing blue fruit, while *V.
parvifolium* produces a bright red ber-
ry and *V. membranaceum* bears dark
purple berries.

"These are neither true huckleber-
ries or blueberries," writes Prof. Co-
ville, "but close relatives of the whor-
tleberry of northern and western Eu-
rope. The high-bush blueberry is *V.
corymbosum*; the low-bush, *V. angus-
tifolium*."

Subscribe for The American Fruit
Grower Magazine—3 years for a
dollar.

Winter Meetings

NEW JERSEY State Horticultural
Society, Hadden Hall Hotel, At-
lantic City, N. J., December 4th, 5th
and 6th. H. H. Albertson, Secretary,
Burlington, N. J.

American Pomological Society, in
connection with Eastern Apple Exposi-
tion and Fruit Show, Commodore
Hotel, New York City, November 6th
to 9th. R. B. Cruickshank, Secretary,
Columbus, Ohio.

Virginia State Horticultural Society,
Roanoke, Va., December 3rd to 7th.

Michigan Apple and Potato Show,
Klingman Bldg., Grand Rapids, Mich.,
November 20th to 23rd.

Connecticut Pomological Society,
Hartford, Conn., December 13th and
14th. H. C. C. Miles, Secretary, Mil-
ford, Conn.

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Goodyear Spray Hose is scientifically and skilfully designed and built to give you exactly the service you want. First, it lasts a long time, returning full value for every penny of its reasonable cost.

And throughout its long life, Goodyear Spray Hose does its work well. It resists the deteriorating action of strong solutions and the strain of high pressures. A rugged Goodyear cover protects this efficient hose when it is dragged over rough ground, or scraped against trees.

Because it is light and flexible, Goodyear Spray Hose is easily handled, assisting the operator to do more and better spraying. When you are buying new hose, look for the Goodyear mark. If your dealer hasn't this good hose in stock, write to Goodyear, Akron, Ohio, or Los Angeles, California.

GOOD YEAR SPRAY HOSE

Protect Your Trees

From destructive rabbits, mice, borers and cutworms—from cultivator bruises and skinning. Eliminate costly replacement and save time lost in growth of young trees by using

Hawkeye Tree Protectors

Quick and easy to attach—wrap this chemically treated wood veneer protector around the tree and tie at top and bottom. It will last for years.

Special \$2 Trial Offer

Send us a \$2.00 bill and we will ship you 50 Hawkeye Protectors by prepaid parcel post. Try these and you will order more. Send now.

Low prices for large quantities.

BURLINGTON BASKET COMPANY

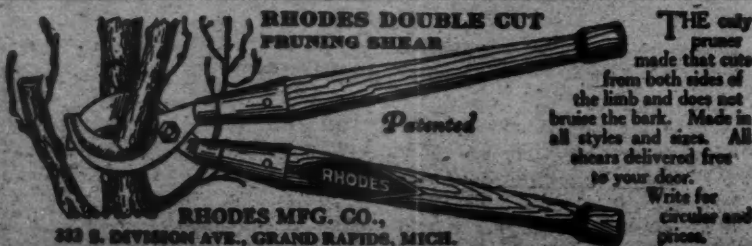
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Also Makers of Hawkeye Fruit Baskets.

Trees—Roses—Vines
at new low prices in small or large lots.
Illustrated 64-page catalogue FREE.
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TREES AND PLANTS
Direct from grower at lower prices. Apple and Peach trees, Apricots and Berry Plants. Private and Berry budding. Guaranteed. Write for new price list.
WE THINSTER NURSERY Dept. 71, Westchester, N. Y.



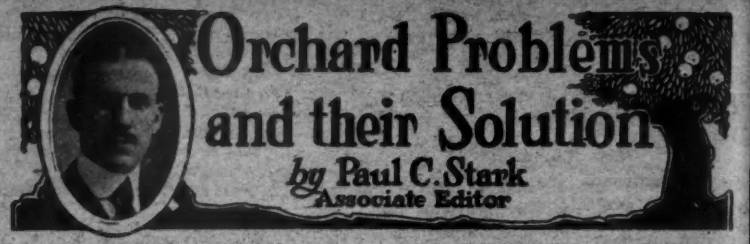
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THE only pruner made that cuts from both sides of the limb and does not bruise the bark. Made in all styles and sizes. All always delivered free to your door.

Write for circular and prices.

RHODES MFG. CO.,
333 S. DIVISION AVE., GRAND RAPIDS, MICH.



Orchard Problems and their Solution

by Paul C. Stark
Associate Editor

Fall Planting of Cherry

I am setting out a small cherry orchard this coming season. Would you advise me to plant the trees this fall or wait until spring?—B. L. N., Missouri.

FALL planting of cherries is to be recommended under Missouri conditions, also in most other sections except the far North. Fall planting gives a chance for the trees to become well established in the soil by spring at which time they will make an earlier start than spring planted trees. However, no pruning should be given the fall-planted trees until spring, at which time they are treated very much like other fruit trees, although not pruned quite so severely.

Inspection of Borers in Late Summer

When is the best time in the fall to inspect my apple trees for borers? I dug out quite a few worms in the spring but understand that a new brood hatches out during each summer.—E. S. B., Illinois.

APPLE trees should receive two inspections for borers every year. The fall inspection is probably the most important because it follows the hatching of the new brood which comes from the eggs laid during the summer. It is reasonable to believe that the sooner these young worms are removed the less damage will be done to the trees. The work can also be done very easily at this time since the borers will not have gone in very deep. The best results can be accomplished with a sharp knife and a pliable wire which can be run up into the burrows. Small, dark, greasy spots indicate the presence of young borers.

In your state the "worming" can be safely begun about the last of August or the first of September. At this time all eggs will have been hatched and a thorough cleanup may be accomplished. To make sure that none of the worms are missed, it is very desirable to go over all the trees again in the spring before the last part of May, at which time the adult insects begin to emerge and lay their eggs.

Black Knot of Plum

My plum trees are showing black, swollen places on many of the branches. What can I do for this trouble? Will spraying cure it?—G. S. T., Kentucky.

THE disease which you have on your plum trees is known as Black Knot. Although often quite common in neglected orchards, Black Knot is not a very serious disease in well cared for orchards, and may be controlled by removing all affected parts in the fall. It is very important, however, that these "knots" are either burned or removed from the vicinity of the orchard, because they will be the source of new infections as much from the ground as if they were never cut from the trees. Many growers carry a sack along when removing the "knots" and make sure in this way that none of them remain in the orchard.

Protection Against Mice and Rabbits

My young orchard which was planted last spring is now sown to a cover crop, the growth of which I'm sure will be sufficient to attract the mice. Rabbits are also common in my section. What is the best way to protect trees from injury by these pests?—R. O. M., Tenn.

BY far the best and cheapest protection against mice and rabbits is the wire screen tree protector. This makes a very durable and yet effective barrier against animals of all kinds, and at the same time it is something very easily adjusted to the tree.

The cheapest way of making wire tree protectors is to buy galvanized wire cloth in rolls which are twice as wide as the final height of the protector will be. This roll is first cut into two rolls through the middle and then each of the smaller rolls is cut into pieces long enough to make a cylinder 15 to 18 inches long to fit around each trunk.

They can be rolled around round rods to give them a spring. These protectors are then placed around each tree with the cut portion of the wire forced two inches into the ground.

Tree protectors may be put around young trees at any time after cultivation ceases in late summer or early fall after inspection for borers. The area around the tree should be leveled off and cleared away as much as possible, after which the wire cylinder can be put in place with the least amount of trouble. Some growers leave the protectors around their trees for several years. Of course they must be removed temporarily when you are inspecting and cutting out borers.

Veneer protectors can also be purchased and are very popular with many growers.

Mixing Varieties

Would you advise planting a solid orchard of Winesap? I like this variety and if it bears well without pollinating I don't want any other variety. There is some difference of opinion here on this subject.—S. E. B., Va.

I WOULD not think of planting a solid orchard of them—or of any other variety. I know of some Winesap orchards in the south this summer that were planted solid and I learned that though the orchards were 12 to 15 years old they had never borne a good crop. These people should top work every fourth or fifth row in order to bring their orchard into proper bearing. Winesap needs cross pollination by other varieties.

Picking Bags for Apples

Do you recommend the use of picking bags for picking apples? I want to use something which will not bruise the fruit and yet be able to pick as fast as possible.—E. J. K., Ohio.

THE leading orchardists are using picking bags almost altogether at the present time for picking even the more tender of fruits such as the peach. The bag also enables the pickers to work with both hands and the greatest speed may be reached with the least amount of bruising. In spite of this fact, however, pickers should be cautioned to use the utmost care in picking even the more firm varieties of apples. "Handle like eggs" is a rule which cannot be over emphasized.

The advantages of the picking bag in preventing the bruising of fruits are many. Not only are there no hard surfaces for the fruit to fall against but in emptying the bag it may be lifted directly into the transporting packages and no fruits need drop against the bottom or bump against each other. The importance of this is great, because only high grade, perfect fruit will bring the high prices which the growers are seeking.

Sherwood Favorite Apple

What can you tell me about Sherwood Favorite Apple. Is it valuable?—M. A. D., Ill.

SHERWOOD Favorite is a synonym of Chenango (Strawberry), a good late summer apple, but many of the best growers are planting Wilson Red June instead.

Fruit Grower and Railroad

(Continued from page 3.)

probably 12,000 cars of cantaloupes. The tonnage will be 15 to 16 tons to the car.

New Equipment.

The railroads are trying earnestly, and have been trying for months, to prepare for a very heavy traffic. Between January 1st and June 1st they put into service about 66,000 new freight cars and 1,700 new locomotives. In addition, on June 1st they had on order over 107,000 new freight cars and over 2,000 new locomotives. Both the equipment manufacturers and the railroads will make every effort within their power to obtain the earliest possible delivery of this equipment.

Particular attention is being given to hurrying repairs on bad order equipment, both cars and locomotives. An effort is being made also to increase the daily movement of freight cars as well as to increase the load. Shippers can help themselves as well as help the railroads if they will put forth every effort to load and unload promptly instead of using the cars for storage purposes.

Particular attention is being paid this year to westward movement of empty cars by the eastern and southern lines. The number of cars sent westward through Chicago and St. Louis to be loaded with grain has been close to 1,000 daily. Ample cars have been provided for the movement of the peach crop from Georgia which is reported to be exceptionally large this year and for the movement of cantaloupes from the Imperial Valley of California.

The handling of the fruit crop of the west and northwest is very much like the peak hour in the street car service in great cities like Chicago and New York. Everyone insists on moving at practically the same time. That is particularly true of the demand for refrigerator cars—no delay is tolerated. In a night, almost, every orchard and vineyard sets up a demand for trains of yellow cars, thousands of tons of ice, locomotives in first class running order, tracks in the best condition, and fast and uninterrupted schedules to the eastern markets. Everything must move, and move quickly. The demand is just as imperative with respect to other commodities, but delay in other cases does not entail such heavy losses. Excepting as to meats, no other branch of business needs so imperatively and instantly the best of service from the railroads. The only way to get this service is by spending money for equipment, and the only way to get the money is to let the railroads earn it. Every business man and every business association should be using their influence now to see that the roads are permitted to earn a fair return.

Lower Rates Not Only Factor.

While lower freight rates seem to be the only thing desired by a large part of the shipping public, there are other ends of very much more importance. The failure of business men to understand this seems incomprehensible. Many men who would not for a moment consider trying to operate a business on an average return of less than 10 per cent seem incapable of seeing that the railroads cannot prosper and develop properly on less than 5% per cent upon the capital actually invested in them.

The belief seems to be quite common that railroads always can get money; that they will never stop running. The fact is, however, that if protection for railroad credit is not provided in a reasonable assurance of net earnings no sensible man will invest in railroad securities.

So many men, in their eagerness for lower rates, seem to forget entirely the only safe and sane way in which reductions are to be obtained that the situation is difficult to understand. There are things very much more important than rates, much as we might wish to see them reduced. It is of far more importance to have cars ready and locomotives to haul them in order to get the commodities

promptly to the markets for the consumers, than it is to haggle over a small difference in the price to be paid for moving the goods.

The producers of fruits and vegetables, broad-minded and fair men as a very large number of them have been, still are not free from this common obsession which attributes all their troubles to the railroads. This subject has been investigated from the orchards and vineyards in California to the last point in the old Fulton Street market in New York City. Seventy cents a dozen has been paid for lemons in New York City at a time when lemons were cited as a specific commodity which high freight rates had placed beyond the reach of the ordinary consumer.

It is a fair assumption that freight rates have little or nothing to do with the movement of crops, particularly of fruits and vegetables. This seems to be well indicated by the following table which shows the movements of carloads of various fruits and vegetables hauled by the railroads during the year 1916, when freight rates were lower than they had ever been, and during the year 1921 after the increases in freight rates which had been made in the years 1918 and 1920:

	Carloads.	1916.	1921.	Increase.	Per
	1916.	1921.	1916.	over	cent.
White potatoes	114,000	214,000	100,000	87	
Apples	49,000	92,000	43,000	88	
Cabbage	13,000	21,000	8,000	138	
Cantaloupe	17,000	25,000	8,000	47	
Celery	5,000	12,000	7,000	140	
Lemons (1917)	491	11,887	11,496	2871	
Oranges (1917)	5,437	65,881	60,454	1111	
Grapes	16,587	37,202	20,615	124	
Lettuce	2,645	15,618	12,971	600	
Onions	13,043	23,319	10,276	79	
Peaches	23,083	36,000	12,917	12	
Pears	8,486	12,821	4,335	52	
Watermelon	31,690	46,465	14,775	47	

As a further proof that freight rates have little to do with the movement of fruits and vegetables, it may be stated that, in spite of the increase of freight rates in 1920, heretofore referred to, the Southern Pacific System, during 1921, hauled 25 per cent more carloads of perishable fruits in 1920 and the Santa Fe Railway hauled about 31 per cent more perishable products in 1921 than in 1920. By efficient operation the railroads succeeded in cutting down their schedules so that there was a reduction in time of 26 hours between California and Chicago and 24 hours east of Chicago. That was certainly a very excellent record in the handling of perishable products which required extreme dispatch by railroads which were then emerging from under the difficulties of government operation, and was of far greater importance to shippers than a small difference in rates.

The railroads must have additional trackage, more locomotives and other facilities to enable them to promptly handle the fast increasing business in fruits and vegetables. In order to secure these things they must have capital. To get capital, they must have credit—in fact, their long impaired credit must be restored so that investors will be willing to advance them the necessary money on new bonds and securities which must be issued. To restore their credit they must be able to show sufficient net income earned to pay all their interest and other fixed charges, and to provide reasonable dividends to their stockholders.

In this connection, it may be added that with the restoration of their credit, resulting in their ability to provide all the facilities and equipment needed, there should follow a reduction in their expenses through operating economies which can better be brought about with improved facilities and which, having been effected, would enable them to reduce their rates for the fruit and vegetable growers and other shippers.

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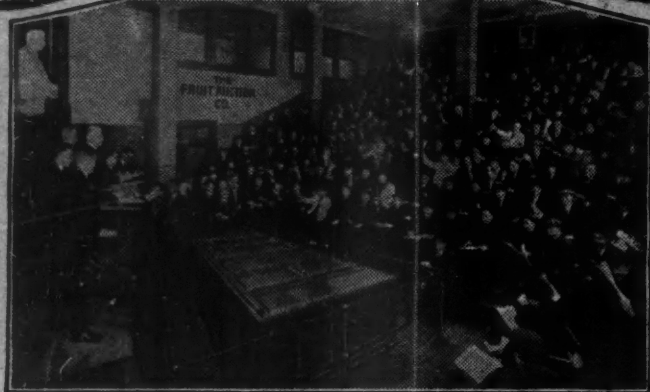
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MARKETS AND MARKETING

APPLE growers are naturally interested to learn about opening prices from various sections of the country. There was much disappointment that there was little or no activity at the annual meeting of the International Apple Shippers' Association. Since that date, however, there has been considerable activity. The big apple crop of Calhoun County, Ill., has largely been sold. This crop is generally sold rather early. Last year most of the apples were sold at \$2 a barrel on the tree. This year a considerable portion of the fruit was sold for \$1.50 to \$1.75 a barrel on the tree but some of the better orchards secured as high as \$2 on the tree. At this price the apples would figure at about \$4 a barrel laid down in Chicago. These prices are for both grades and for all varieties. The crop in the Calhoun section is figured very high. Some estimates state that the county will ship out this year a half million barrels.

A few sales have been reported from the West Virginia and Virginia section, Grimes having changed hands at about \$5. The later varieties have been slow in moving. Some figures on Ben Davis have been sent out at \$3, which growers consider too low.

The better class of apple growers in such states as Ohio, Illinois, Indiana and Kentucky are figuring that good grade Jonathans, Grimes and similar varieties can be disposed of at about \$2 a bushel at the orchard. There is a feeling that the better grade, long keeping varieties will bring even more money.

There has been some activity in the boxed apple market owing to the fact that buyers have been very anxious to secure small sizes for the export trade. The English crop being nearly a total failure makes that market an inviting one for this season. Even by September some early maturing Yellow Newtowns from the Pacific Coast will be leaving for England. The small sizes are bringing a premium over last year's sales. It is felt that this will stimulate the price on all boxed apples. There undoubtedly will be a very heavy movement out of Seattle and Portland and at the latter port special cold storage facilities are being rushed to handle the heavy tonnage.

Some western boxed apples, early varieties, have been bringing very fair figures f. o. b. King Davids have been reported as high as \$1.65 and Winter Bananas at \$1.75. Some of the early cars of Winter Bananas have been bringing from \$3 to \$3.50 in the east. These were prices for good color and quality.

It is expected that a considerable business will be done this year in apple exports to South America. Twenty-thousand-ton refrigerated ships will operate direct from Pacific Coast ports to the east coast of South America. Early indications are that the price for the tonnage arriving in good condition in South America will be quite satisfactory.

THE pear market did not go through the disastrous slump of a year ago. Boxed Bartlett's have held up very well indeed. Growers in the Pacific Northwest have been realizing from \$1.65 to \$2 f. o. b. for the better grades. The market for eastern Bartlett's stiffened very materially over a year ago, the price being quoted in New York ranging from 4 to 5 cents a pound. This is due partly to the fact that there is a light crop in the East and that the market has been strong on pears throughout the season.

THE better class of growers throughout the Middle West have done very well with their peaches this year, prices ranging from \$2 to as high as \$5 for very large, high-colored fruit. It is generally considered that southern and middle western growers this year have had a very good season. There has not been the congestion of tonnage experienced a year ago and the wide spread in the season this year has been of material aid to the peach growers.

GRAPE growers on the Pacific Coast have been somewhat discouraged. It has been reported that about one-fourth of the crop has been lost by mildew. Buyers have hesitated in taking hold of deals due partly to the mildew situation and also to the fact that many lost money a year ago. There has not at this writing been the heavy movement anticipated. Grapes which will arrive in fine condition, free from mildew or other diseases, will undoubtedly bring pretty fair prices. Eastern grape growers are hoping for a price around \$75 to \$80. They base this on the fact that dry weather has very materially curtailed the crop.

CITRUS prices have been materially strengthened during the past few weeks as the quality has improved. Rather heavy importations have been made of Italian lemons, which have weakened the market somewhat. The cool weather during August and early September also reduced lemon consumption. Italian lemons, however, have been running considerably below the price of California stock, which is superior.

Florida is now sending out estimates for one of the largest crops in its history. It is now estimated that there will be some 20,000,000 boxes of citrus fruits produced in that state this coming season. Steps are being taken to get a wider distribution of the tonnage than has been experienced in the past.

THE dried fruit market has been very quiet. This has been due partly to the fact that there has been a heavy carry-over from last season and is also due partly to the reorganization that is taking place with some of the large co-operatives on the Pacific Coast. Most of the associations are now going on the basis of not selling to packers and are quoting to the trade from time to time the exact tonnage of dried fruits available.

It is now estimated that California has a carry-over of about 45,000,000 pounds of prunes and that the new crop will be around 160,000,000 pounds. It should not be difficult to sell this tonnage as the total carry-over and the new crop will be considerably under that offered to the trade in some years in the past.

There is also a carry-over of prunes in the Pacific Northwest but as the crop is relatively light in that district, it should not influence the market materially.

Apricots show a carry-over of about 4 1/2 million pounds. Figures vary tremendously on the new crop, ranging as high as 40,000 tons to as low as 20,000 tons.

There seems to be a disposition on the part of the independent packers to cut the prices of the associations, no matter what those prices are. In all probability, should any association name a price as low as 2 cents a pound on dried fruit, the packers would probably offer 1 to 3 cents.

Down in Old Kentucky

(Continued from page 7.)

fight against the San Jose scale. Two years ago the scale became so bad that quite a few trees in one section of the orchard died. It was found that lime sulphur would not control the scale in this orchard and it required oil sprays to do the work. In fighting blotch, scab and bitter rot, Bordeaux 3-5-50 has proved to be the best spray.

A delightful picnic lunch was served in Atkinson Park and the program was given during the afternoon. C. I. Lewis, managing editor of the AMERICAN FRUIT GROWER MAGAZINE, spoke on "What Other Fruit Growers Are Doing." Dr. B. A. Porter, field entomologist of the United States Department of Agriculture, stationed at Vincennes, discussed "Scale Control," while W. S. Brock, extension horticulturist, University of Illinois, spoke on "Fertilization and Soil Management as Regards Annual Production of Apples."

The second morning a start was made about half past eight, the first stop being with Frank T. Street. The orchard handled by Mr. Street was somewhat neglected in the past. The trees are far too dense and some pruning is now being done. In order to utilize the help to best advantage, some of the pruning is being done in the summertime. Later on they expect to remove quite a number of the trees where the plantings are too thick. Nitrate experiments are being conducted in several parts of the orchard, especially among the younger trees. There is a most excellent two-year-old peach orchard on the farm. It is on a fine piece of soil in a location having both soil and air drainage.

Pruning Peaches.

W. S. Brock of the University of Illinois gave a very entertaining pruning demonstration. He emphasized the fact that peach trees in southern Illinois, Indiana and northern Kentucky make an unusually rank growth and that that must be taken into consideration when pruning. His pruning consisted of a moderate amount of heading back with a moderate amount of thinning. He stated that he believed the best cover crop in the orchard was rye, that cow peas were not good unless planted thickly, because they loosen the ground so that it washes worse than ever. Rye was generally left on the ground too late in the spring and often took moisture which the peach trees needed. A good thick stand of oats, however, would give organic matter on turning under in the spring and would give enough material to prevent washing but should be killed during the winter so that it would not interfere with the spring moisture supply.

A. J. Olney gave a talk on apple pruning. Mr. Street also had a spraying demonstration for the benefit of the visitors.

The last orchard visited was the fine 30-acre bearing orchard of Ben E. Niles. The party arrived there just in time to enjoy a fine barbecue dinner. The afternoon was devoted to speaking. "Orcharding of the Future" was handled by Prof. Brock of Illinois. "Handling of Fruits in Storage" was the subject treated by J. R. Magness, United States Department of Agriculture. The concluding talk, "Some Phases of Fruit Marketing" was delivered by C. I. Lewis, managing editor of the AMERICAN FRUIT GROWER MAGAZINE.

The growers departed for their homes feeling very enthusiastic, knowing that they picked up many fine points of value.

Fruit growers of northern Kentucky are rather new to the orcharding game. They are, however, an enthusiastic group of men who are making frequent trips into neighboring states of Indiana and Illinois where they can visit some of the finest orchards in the middle west. The variety question has not been entirely settled. Peaches, however, will become one of the main crops in the district. Some early varieties such

as Mayflower, will be grown and later standard varieties such as Elberta and Hale. The leading variety of apple at the present time is the Winesap but much interest is being shown in early varieties, such as Yellow Transparent and Henry Clay.

On the whole, the orchards of the district carry far too much wood. Some of the orchards a few years ago were too heavily pruned and are now showing the reaction. The average orchard in the district, however, would be very materially benefited by a systematic light thinning carried pretty well over the trees so that the fruit can color better on the inside of the trees, so as to encourage the formation of fruit buds on the main branches and so as to enable the growers to more successfully fight fungus diseases.

The Henderson district is going to grow and develop and will become in time one of the leading fruit districts of the Mississippi Basin.

Fruit Trade of Czechoslovakia

by Consul Walter A. Foote

THE fruit yield of Czechoslovakia during the calendar year 1922 amounted to 11,161,561 quintals, valued at \$26,796,039. (One quintal equals 220.46 pounds; crowns are converted to dollars at the present rate of exchange, \$0.03.) While the fruits comprising this total are grown throughout the country, Bohemia produces approximately as much as the remaining sections of the Republic combined. Production of apples, pears, sweet cherries, and plums is especially large in Bohemia. Slovakia leads in the growing of strawberries, peaches, and apricots. Slovak apples and plums are of excellent quality and are considered superior to those grown in other sections. Moravia follows Bohemia in production of apples, pears, cherries, and plums.

A large percentage of Czechoslovakia's important and varied yield of fruits is lost annually because of the lack of modern methods of picking, sorting, cleaning, and tinning or preserving.

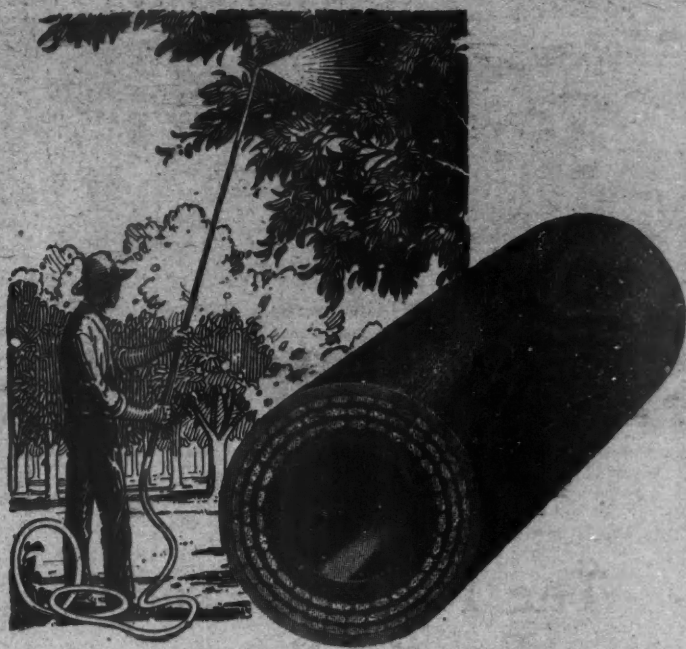
Fresh Fruit Shipments Predominate.

During the calendar year 1922 Czechoslovakia imported 26,884 quintals of fruits, valued at \$721,890, according to official Czechoslovak statistics. The principal items of import were apples and pears from Hungary, unsweetened plum jam from Yugoslavia, and dried plums from Yugoslavia and Austria. Large quantities of fruits were imported from Hungary and from Germany, because of the rise in value of the Czechoslovak crown as compared with the currencies of these countries.

Czechoslovakia's exports of fruit for 1922 totaled 191,151 quintals, valued at \$2,562,600. Of this amount, shipments of apples amounted to 163,500 quintals, valued at \$1,899,900. Apples constituted approximately 86 per cent by weight and 74 per cent by value of all fruit exports. Nearly 80 per cent of the apples exported were shipped to Germany. Large quantities of fresh and dried plums were also shipped to Germany, together with small shipments to England, Switzerland, and the Netherlands. Practically all the exports of unsweetened plum jam were sold in the Netherlands. Exports to Austria, Hungary, Poland, and other central European countries were relatively unimportant. It is of particular interest to note that Czechoslovakia's exports of fruit are chiefly fresh fruits, and that dried or tinned fruits are unimportant. The fruit consumed locally is also used fresh.

Fire Hazard

WHERE alfalfa, hay or straw is being produced in the orchard, care should be taken to plow fire lines and to take such steps that fire cannot run freely through the orchard. A large number of fine orchards are ruined annually by fire catching in the stubble, dried up alfalfa and similar material. A rapid hot fire is sufficient to practically ruin the trees.



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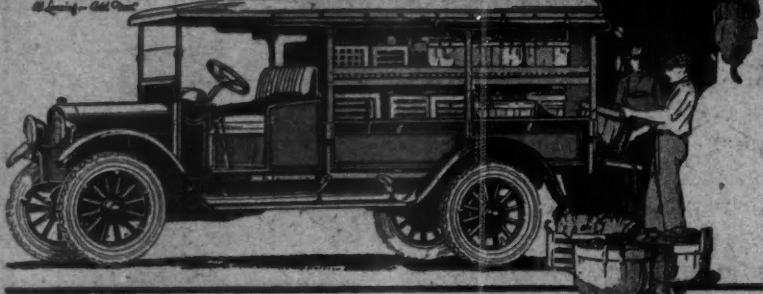
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NEW IMPROVED OTTAWA



Co-operative Associations Do Tremendous Business

CO-OPERATIVE associations in the United States are doing an annual business of probably \$1,500,000,000. In the last two years there has been a steady, and in some states a spectacular, increase in the number and scope of farmers' co-operative enterprises. Every state contains farms that sell more or less produce co-operatively. Reports to the department indicate there are considerably more than 14,000 farmers' co-operative organizations in the country, which market from 10 to 15 per cent of the total produce sold by the farmers.

It is conservative to estimate the total annual business of these farmers' buying and selling organizations at \$1,500,000,000. The billion-dollar mark had been passed in 1919, according to the Fourteenth Census, and since then there has been a prodigious development of the co-operative movement. In 1919, according to the census figures, the farm value of commodities marketed and supplies purchased co-operatively was \$306,599,303. This total left out of account the value added by the operations of the co-operatives in assembling, grading, processing, and packing. Even at the most modest reckoning this added value would carry the shipping-point value over the billion-dollar mark. A census taken now would have to include many large organizations not in existence in 1919, such as the large cotton and tobacco co-operatives of the southern states, whose membership totals exceed all previous records. It would have to include many new organizations dealing in fruit, peanuts, rice, eggs, poultry, and dairy products. Although exact figures are not available as to the amount of business done by these new organizations, it undoubtedly runs into the hundreds of millions.—U. S. D. A. Official Record.

FIVE hundred thirty-one members were added to the California Almond Growers' Exchange, San Francisco, Calif., as the result of a membership drive lasting from June 1st, 1922, to April 1st, 1923, and costing \$15,850, an average of \$29.85 per member. These new members represent 5,310 acres of orchards. At the average yield this acreage will bring an additional 9,292 tons of almonds into the exchange in the five years of the contract, a greater tonnage than California has ever produced in one year. At one-half cent per pound the revenue to the exchange on the new business will amount to approximately \$92,000.

The total cost of the campaign by which the 531 new names were secured, was made up as follows:

Salaries	\$4,836.63
Travel	4,155.96
Automobile upkeep	1,155.38
Rent, postage, telephone, telegraph	659.84
Supplies	844.42

Total \$15,851.75

From April 1st, 1923, to June 1st, 1923, 112 more members were added, making 643 during the year. The number of orchards in the exchange is now 3,110. Members are urged to aid in curtailing expenses by personally securing new members.

The directors of the exchange have recently authorized the creation of a manufacturing department for the shelling and canning of salted almonds, with equipment for blanching and chocolate dipping. This program calls for an original outlay of about \$30,000.—April. Co-operation.

OWING to the rapid expansion of the Federated Fruit & Vegetable Growers, it has been necessary to take on new directors to represent the new units. The following new directors have just been elected: J. A. Worman, General Manager, Wenatchee-Okanogan Co-operative Federation of Wenatchee, Wash.; C. P. Early, General Manager, Mutual Orange Distributors, Redlands, Calif.; John W. Langdon, Vice-President, Inland Empire Co-operative Federation of Walla Walla, Wash., and A. O. Eckert, Director, Illinois Fruit Exchange of Belleville, Ill.

These together with the following directors make up the board: James Nicol, President, Michigan Fruit Growers, Inc.; C. B. Lewis, Vice-President, Jersey Fruit Growers' Co-operative Association; Nelson R. Peet, General Manager, Western New York Fruit Growers' Co-operative Packing Association; J. J. Parrish, Secretary, South West Georgia Watermelon Growers' Association; J. A. McCollum of New York; J. S. Edwards of California; J. R. Howard, First President of American Farm Bureau Federation; Dr. O. F. E. Winberg, President, Gulf Coast Citrus Exchange of Alabama; R. B. Peters of California; H. P. Porcher of Florida, and H. W. Jeffers of New Jersey.

The Federated recently made a connection with the Gulf Coast Citrus Exchange, of which Dr. O. F. E. Winberg is President. This coming season this exchange will operate 14 packing houses. The tonnage of Satsuma oranges in that territory is increasing very rapidly.

S. H. DANLEY has been elected President of the Bald Knob Fruit Growers' Association of Bald Knob, Ark., succeeding President J. A. Adkins who declined to be a candidate. W. H. Nichols was elected Vice-President, W. C. Crenshaw, Secretary, and Frank Bennett, J. R. Killman, G. B. S. Cooley and A. J. Elliot were elected as board members. This organization expects to ship 200 cars of berries in 1924.

PLANS are being pushed for the organization of the Northwest Apple Growers' Exchange. Aaron Sapiro has been called in to assist in the organization. It is hoped to get all the big co-operatives of the Pacific Northwest together into one exchange. Individuals cannot join unless they have a large tonnage.

SEVENTY cars of fruit a week from October 7th, 1922, to May 7th, 1923, is the record of the Western New York Fruit Growers' Co-operative Packing Association, Rochester, N. Y. During the seven months the movement was so steady as not to vary more than 10 cars throughout the entire season, according to a statement of the manager. In order to satisfy a discriminating trade the association proposes this year to emphasize the more careful standardization of fruit with rigid grading and packing regulations.—April. Co-operation.

CALIFORNIA Peach Growers re-elected at their annual meeting J. H. Niswander as president and J. L. Reeder as general manager. The association this past year made sales amounting to \$4,859,455.12.

This association has been the main factor in the marketing of dried peaches and figs in California for a number of years and its general operations have been very successful.

Famous Indiana Orchard

(Continued from page 10.)

of apples. The average amount of cider sold by Mr. Dean was from 800 to 1,000 barrels per year. A small portion of this was sold for drinking purposes but most of it was made into vinegar. A generator house was built where the conversion of cider into vinegar was carried on. He received 12 cents per gallon for the cider in barrels. Barrels then were purchased from 60 to 90 cents. The same kind of barrels today will cost about \$7.

Some of the liquor houses purchased this crabapple cider and made it into various drinks. By the addition of flavoring extracts the following drinks were sold: Peach, Blackberry, Pear and Apricot. The wholesaler received 40 to 75 cents per gallon for this beverage.

Varieties Planted.

It is of interest to note the variety of peaches used in the early orchard by Dean as they compare with the varieties used today. The early varieties were: Hales' Early, Waterloo, Alexandria and Beatrice. Mid-season: Troth's Red, Honest John, Ward's Late and Dean's Red Free. The later varieties: Ward's Late, Smock, Old Mixon Free, Old Mixon Cling and Heath Cling.

In addition to making cider and handling the peach crop, Mr. Dean devoted considerable attention to the by-products of the orchard and made large amounts of apple-butter, canned peaches and strawberries. The apple-butter was put in 3-pound tins, also barrels. During the season when there was a large apple crop around 5,000 gallons of apple butter would be made per season. This sold for an average price of 75 cents per gallon.

"There is money in the fruit business, if properly conducted," stated Charles Dean as he pointed to a three-acre tract of 125 apple trees. From 1908 to 1918 that block of trees netted \$100 per acre per year. The selling price of the apples averaged about \$4 per barrel. They received the dormant spray and two sprays in the summer, the codling moth and the Bordeaux spray two weeks later.

Another block of apple trees near the three-acre tract containing 400 trees and 1,200 peach fillers produced a bumper crop in 1913; 2,700 bushels of peaches returned \$2,500. "The block of apple trees would have come into bearing sooner if I had removed the fillers," said Mr. Dean. The 300 Grimes and 100 Jonathans that were set in this block show considerable vigor and health, yet they have been held back some by the peach fillers. The 1922 crop from these trees was 100 barrels of Grimes and 100 barrels of Jonathans.

This year the orchard has received two cultivations with the Tamden Disc tractor outfit and sprayed according to the Purdue spray schedule. The estimated crop by Mr. Dean is 200 barrels of Grimes and a few Jonathans.

A Good Site.

In 1914 a block of apple and peach trees consisting of 20 acres was planted on the bluff near the Ohio river. The elevation here is 400 feet above the river. This is an excellent site. In 1919 when practically all the peaches were killed by frost in Southern Indiana this peach orchard produced 1,150 bushels of marketable peaches and all the fruit was sold in the orchard at an average price of \$4 per bushel.

Fruit growers in the southern part of the state wonder why this orchard produced a crop in 1919 when practically all the fruit in this section was killed by late frosts. Dean explains this in one word, "site." When selecting a location for his peach orchard he paid particular attention to a good site, locating the orchard on the banks of the Ohio River at a place where the elevation is over 400 feet; therefore, the river and valley provide excellent air drainage. When the frosts came the trees near the river were not affected. The cold air being heavier than the warm air it settled in the valley and prevented frost damage, while in most peach orchards

a mile back from the river the entire crop was killed. When it was announced in the papers that Dean had peaches for sale, farmers and citizens within a radius of 40 miles drove to the orchard and purchased his crop.

The apple trees in this block consist of: 50 Rome, 50 Stayman, 50 Fall Pippin, 50 Baldwin, 200 Grimes, 100 Jonathan, 50 Wealthy, 50 York and 100 Transparent.

Believes in Fertilizers.

"I believe in using a liberal supply of fertilizer," stated Mr. Dean. On six of the rows containing 240 peach trees an application of Nitrate of Soda was used at the rate of 3 pounds per tree, applied July 15th, 1919. This fertilizer was used to test its value in increasing the size of peaches. Owing to the extreme dry weather the results were not as marked as expected. However, the plot that received the Soda contained larger and a greater percentage of choice fruit than where the Nitrate of Soda was not applied. Furthermore, due to the increased size the yield was 10 per cent larger and the trees showed a more luxuriant growth of foliage. Mr. Dean figures that the Nitrate of Soda more than paid for its cost in the quality of fruit, not taking into consideration the development of the tree.

The apple trees received an application of from 3 to 8 pounds of Nitrate per season, depending upon the size and age of the tree. When asked what he thought of Nitrate fertilization, Mr. Dean replied, "I believe it is just as profitable, if not more so, to fertilize the apple and peach orchard as it is to fertilize any other field or farm crop."

It has been impossible for Mr. Dean to give sufficient attention to his orchard work and farm, therefore, this season he has employed an experienced manager, W. P. Hays, who is a graduate of Purdue University and also has had practical experience in handling orchards.

Mr. Hays states, "The prospects for a good fruit crop are excellent this season. However, the light snow and freeze that was experienced in this locality did considerable damage to the trees. This was more noticeable on trees farthest away from the bluff. However, the trees located along the bluff are going to produce a good crop this year."

Story of a Mountain Orchard

IN a cove in the mountains lies a little steep farm of 65 acres.

A fine flock of hens, fat cows and a fat horse, roam over the steep hill fields which are covered by grass.

The farm folk who live in the comfortable farm house live in comfort, almost luxury. They dress as well as anyone need wish to, have plenty of reading matter and plenty of money for their simple needs, and their table is loaded with the good things of the farm.

They have a fine orchard on these steep hillsides, apples, plums, pears, peaches and small fruits. Every year this orchard bears. Last year no one in our section had any fruit, but the thrifty housewife on this farm canned and preserved pears, peaches and apples, made apple butter and gallons of jelly of all kinds, and sold to those less fortunate many bushels of apples at live and let live prices.

Several years ago they bought this farm and went in debt half of the purchase price and in two years paid out and paid it mostly in fruit.

Here in this mountain section we have never sprayed, though I am sure our fruit would be still finer if we did and so this man's orchard costs him practically nothing, except a little pruning and this is done on days when the ground is too wet to work, and he is assured of an income every year, as the location of this farm is such that fruit is not likely to ever be killed by freezes as the hills protect it. The man who has an orchard in a cove in the mountains may consider himself very fortunate.

ADD A. C. HALL, Tennessee.

Orchard Heating is Preventive Insurance

PREVENTIVE Insurance is the ideal kind. With it you are sure of a full crop—maybe just the year frost damage results in extra high prices for your fruit. Orchard Heating also insures your trees, protecting them from freezing.

There's no question mark attached to orchard heating with Scheu or Canco Heaters and Smudge Pots. Growers all over the country have tried them and found them effective and economical—a sound business investment. The Scheu Smokeless Orchard Heater (made by American Can Company) has been officially approved by the Fruit Growers Supply Company, the purchasing organization of the Sunkist Growers.

Bankers Boost Orchard Heating

In fruit growing districts you find bankers advocating heater protection—the surest sign of the true economic importance of Orchard Heaters. One in Southern California writes: "We believe that frost protection has paid our institution as well as the growers inasmuch as it has practically eliminated all loss from frost wherever the heaters have been properly used."

Temperature Raised 13°

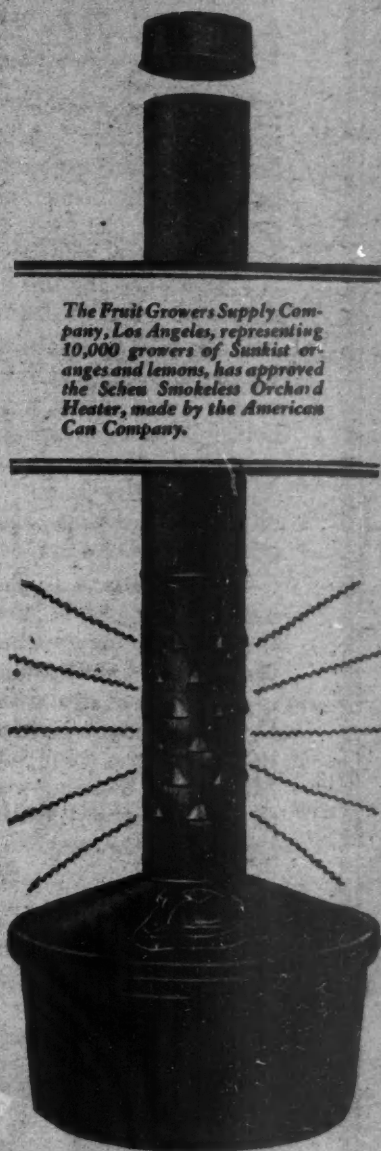
In the great California freeze of January 1922 a grove in Pomona, equipped with 50 Scheu Heaters per acre, maintained a temperature of 31° F inside while it was 18° outside. The grower saved 96.5% of his crop. In the grove across the street the entire crop was lost and the bark of many trees was split.

The Danger Season Is Near

Now is the time to plan and prepare for the next danger season. Fill out and mail the coupon below. A demonstration does not obligate you in any way.

American Can Company

Orchard Heater Department
Toledo, Ohio Los Angeles, Cal.
SKINNER MACHINERY CO., Danedin, Fla.
Distributors for Virginia, North and South Carolina, Georgia, Alabama, Florida



9 gallon oil burning heater—preferred for effectiveness, economy and durability. Also in 7 gallon capacity. Orchards protected with 50 Scheu Heaters per acre saved fruit in the California freeze of 1921-22 when outside temperature was 17° F.



Canco smudge pot. Holds about 10 quarts. Cheap, simple, effective. Orchards equipped with 100 No. 2 Canco smudge pots per acre maintain temperature at 30° F with outside temperature at 24° F.

FOR deciduous orchards protection can be had with No. 2 Canco smudge pots at a cost of \$50 per acre. Combination protection can be had with our other style heaters at slightly higher cost.

MAIL THIS COUPON

American Can Co. Toledo, Ohio

I have _____ acres

of _____

and would like a demonstration of your Orchard Heaters. I understand that this does not obligate me in any way.

Signed _____

Invest in a McCormick-Deering for Fall Plowing and Belt Work

The remarkable new warranty covering the crankshaft and the crankshaft ball bearings in McCormick-Deering Tractors has shown the farmer more clearly than ever that he can best depend on these tractors for real value and economy. This is a guarantee for the entire life of the tractor and that means much.

It may well prove the deciding factor in your own investment. The ironclad agreement, printed below, provides you with a lasting security covering these important parts of the tractor. It is evidence of quality in the entire tractor. It is an indicator of practical design, accurate assembly, generous size of parts, and long life.

The fall season is ahead—a season of many power jobs, both drawbar and belt. Do your plowing speedily and well with a McCormick-Deering and fit your tractor to fall and winter work. McCormick-Deering Tractors are designed to handle belt jobs as you want them handled. And McCormick-Deering machines are made to work right with tractors. The combination can't be beat.

Stop at the McCormick-Deering dealer's and go over the construction and the features of these tractors. Study the value of replaceable wearing parts, the unit main frame, ball and roller bearings at 28 points, etc. And remember this important point: When you buy a McCormick-Deering Tractor you get all necessary equipment—throttle governor, belt pulley, platform, fenders, brake, etc. No extras to pay for. Make your power investment safe from every point of view by placing an order for a McCormick-Deering 15-30 or 10-20 Tractor.

SPECIAL WARRANTY

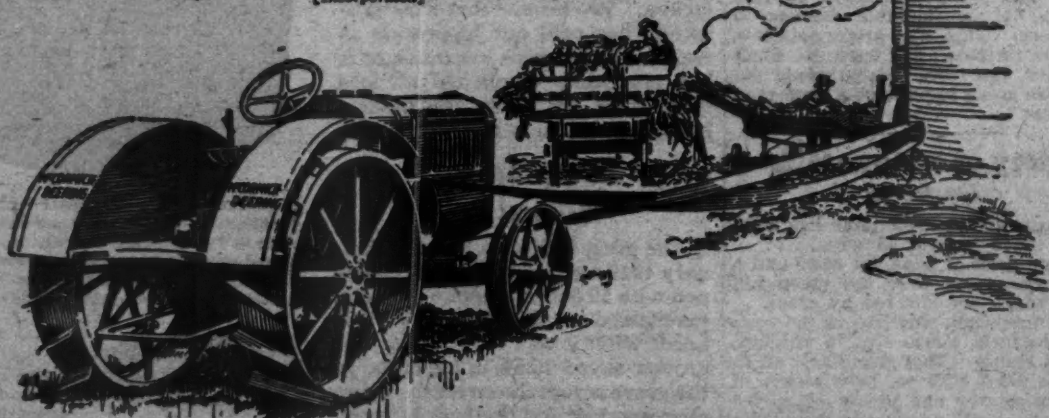
given every purchaser

The seller agrees to replace free the Two-Bearing Crankshaft in any 10-20 or 15-30 McCormick-Deering tractor, should it break during the life of the tractor, provided the broken parts are promptly returned to the factory or one of the branch houses.

Further, the seller agrees to replace free any Crankshaft Ball Bearing in the 10-20 or 15-30 McCormick-Deering tractor, which may break, wear out, or burn out during the life of the tractor, provided that the defective ball bearing is promptly returned to the factory or one of the branch houses.

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Write today for catalog and special Fall Price List. If interested, ask for booklet of "Home Beautifying Suggestions"—free.

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SKINNER PACKING HOUSE NEWS, FIFTH STREET DUNEDIN, FLORIDA

Cultivated Orchards Have Many Advantages

HORTICULTURISTS at the New York State Agricultural Experiment Station at Geneva strongly advocate cultivating New York apple orchards during the summer and planting cover crops in the fall because of the decided advantages of this practice over a permanent sod for most New York fruit districts as revealed by long-continued experiments and by personal observation throughout the state.

Orchardists who question the merits of clean cultivation are urged to cultivate a small part of their plantings and to note the almost immediate response of the trees in increased vigor and productivity. In one of the station experiments, the average yield for a 10-year period from an orchard left in sod was 69.16 barrels per acre as compared with 116.3 barrels per acre from an orchard which was cultivated during the same 10-year period. Every means for measuring the growth and vigor of the trees

in orchards left in sod and those which were cultivated showed a decided increase for the cultivated orchard.

Saves Soil Moisture.

The beneficial effects of cultivation are attributed to many factors, among the most important of which is said to be the saving in soil moisture which would otherwise be utilized by the sod, and the elimination of the competition between the trees and the sod for the plant food supply of the soil. It is pointed out that nursery stock can be successfully grown only under the most intensive cultivation; and that, when placed in the orchard, the trees should not be subjected to radically different methods of handling. Also, insect pests and diseases may be more readily controlled in cultivated orchards.

When Sod Is Desirable.

"Although tillage is undoubtedly the best method of caring for the majority of apple orchards in New York," says the station horticulturist, "there are particular situations, soils, and economic conditions under which it may be advantageous to maintain the orchard in sod. Plantings located on steep hillsides where the soil would wash badly under tillage or on rocky land which is difficult to till should probably be kept in sod. On orchard soils of considerable depth which do not suffer from summer drought, a sod may be maintained without serious injury; but on the shallow soils which prevail in most New York fruit districts, a sod will prove decidedly harmful to the trees. The cost of tillage is much more than that of maintaining a sod, although the net returns are greater. Local conditions may make it necessary, however, to depend on a larger acreage in sod to balance the greater productivity under tillage."

Blueberry Notes

LAND that is lying idle because it has an acid soil can be used profitably through the cultivation of blueberries. Dr. Frederick C. Coville, chief botanist of the United States Department of Agriculture, told a large group of farm agents, farmers and state agricultural experts at Whitesbog, N. J., on July 20th.

There are thousands of acres of this type of land throughout the United States.

Fruitful of a large crop of blueberries on the United States government testing plantation under the care of Miss Elizabeth C. White determined the time and place of the meeting. Miss White commenced experimenting with the wild berry about 12 years ago, at about the time the government commenced to cross-breed it. Her active co-operation, especially through contributing bushes of unusually large and succulent wild fruit, succeeded, according to Doctor Coville, in advancing the time of the berry's development 50 years beyond the point to which the department could have carried it unaided.

Subjects discussed at the meeting included the soil and other requirements of the crop, particularly the need for an acid soil, the frost resisting qualities of the seedling that have been produced, and the size, fine flavor and uniform coloring of the fruit. The visitors investigated a field of 16 acres in which each bush represented a distinct variety.

Only a very few of the best will be perpetuated.

One of the most promising new bushes was personally picked by Doctor Coville. There was not a berry on it less than one-half an inch in diameter, and a great many ran up to seven-eighths of an inch, although a dry season had caused the average berries to grow to only three-fourths the size they have shown in previous years.

Farm agents from Cape May, Cumberland, Atlantic, Ocean, Salem, Burlington, Monmouth, and Mercer counties were present, with a few of their farmer friends. H. J. Baker, director of the Extension Service of Rutgers College, and others attended.

The Orchard Home Department

"What of America?"

by Mary Lee Adams

IF you've been out of school for any number of years, read the little book, "What of America?" by Edwin B. Pinkham of the Kansas City Star. We've all forgotten many details of the beginnings of our country. Some of us never knew the delightful, intimate happenings which Mr. Pinkham relates so divertingly for our entertainment and instruction. Few of us have, or ever did have, so keen an appreciation of the significance of the actions of our honored forbears, or so broad a grasp of the institutions which they builded and bequeathed to us.

The brief, vivid descriptions of persons and events, give us a clear insight into the causes, conduct and consequences of the revolution. In mere thumb-nail sketches, the great characters of the time are depicted in an unforgettable way. They become real individuals for whom we feel personal affection or dislike. A few lines, a telling anecdote, and the subject lives and breathes before us.

"There were giants in those days" and we are led to revere their intellect and patriotism, yet we find, with a measure of relief, that colonial and revolutionary grandseas had the same virtues and failings as their great-grandchildren, ourselves. In short, they were essentially human.

While we read and at times chuckle heartily over the snappy narrative, the whole takes shape in a briefly comprehensive story which places our nation and its institutions before us in a manner that gives a complete, rounded conception of what went into their making. Withal, it's a lazy man's book, a busy man's book, a book for the hurried housewife, all of whom can readily find time for the whole succession of quaintly illustrated, ten minute chapters into which the book is conveniently divided. Having read, you will be a better American.

These Women Need Help

CONDITIONS of legal inequality between men and women, are being righted all over the world by the improved legal status of women. Even in our own country we may find the existence of inequalities which we did not suspect. To cite but a few cases:

In Delaware, up to this year, the husband has had greater claim on his deceased wife's real estate than she had on that of her deceased husband. In Delaware and Ohio, the father and mother have but very recently been made equal guardians of their minor children. In California, until this last spring, "the wife could not will away any of the community property, even though she earned all of it."

In France it is no longer legal for a man to beat his wife. In cases of cruelty, the lawyer for the wife-beater had but to cite the right of the husband to inflict "manual punishment." The old law has been pronounced obsolete and wife-beating now furnishes the woman with legal ground for divorce.

England, after a most bitter dispute, has passed an equal divorce rights bill. Unfaithfulness on the part of the husband was far from sufficient ground for divorce. Even if he consented to the divorce, the wife could bring suit on only two grounds—either misconduct coupled with cruelty, or misconduct and desertion. In the latter case she must swear before the court that she wished her husband to return to her, and she must write a letter, couched in terms "which the court considered sounded genuine," entreating him to return. This put perjury at a premium.

In Moslem, Egypt, alas! Women have still to press the demand that their lawful husbands may not divorce them by merely repeating before witnesses the words "I divorce you! I divorce you! I divorce you!"

Women Suffrage in Italy

THE delegates to the ninth congress of the International Suffrage Alliance, expressed the heartiest approval when Premier Mussolini promised that the Italian government would give progressive suffrage to women, beginning with municipal elections.

There was no complaint that this was but half a loaf. It was so much better than no bread, and the general idea had been that Mussolini was prejudiced against the entrance of women into public affairs. Quite likely he was, but is so no longer. Being a most astute person, he has probably seen the trend of the times and taken advantage of the current of world opinion.

Very cleverly he phrased his welcome of women into the new field, as giving promise of the "introduction of some common sense into politics." So long have our ears been supposed flattered by graceful allusions to our intuition, imagination and charm, particularly charm, that it is most refreshing and gratifying to have the notable wearer of the black shirt compliment us on our common sense.

Bible Knowledge Neglected

THOSE of us who read the answers of a body of students of the University of North Dakota, to questions in an examination on the Bible, were somewhat shocked to learn that only eight and one-half per cent passed an average of seventy-five per cent. We laughed outright to find Samson Agonistes, Ruth and Esther placed in the New Testament, while Paul and Xerxes figured in the minds of some students as Old Testament characters.

The shock and the laugh were a natural reaction to the deplorable absurdity of the result. Some of you might get the shock without the laugh if you tried the same examination on your own household. That's your responsibility, and if you doubt that your family are getting all the great moral, ethical and educational benefit that would come to them from a knowledge of this greatest of all books, you can't afford to dismiss the doubt with a laugh.

Those who live in the midst of our Christian civilization, whether they subscribe to the doctrines of the church or not, cannot be considered educated unless they have been made familiar with the history and teachings of the Bible.

Musings of Molly

"I know I'm fat," sighs the heavy woman, "but how thankful I am not to be so fat as Mrs. Tubbs." (Who really weighs several pounds less.) "I may be bald," grunts the man with the shiny scalp, "but thank goodness I'm not like Jack! If I were, I'd buy a toupee tomorrow."

To Failure

Since you are what my days have brought,
All winter and summer that I know,
Breaking away the little twigs
That, one by one, aspire to grow
From the old trunk of my desire—
Since you have seared my bloom with fire
And put a blight upon the bud
That might have been a crooked flower,
I cannot choose but feel your touch
And own your power.

You have been fire, you have been frost,
And storm and shadow and pain to me;
But yet you have not killed the life
Uprising in my stubborn tree.
Sometimes I dream that even I
May learn at last to fill my sky
With all the darling bloom of life.
With waving beauty that men bless
For shelter and shade. O barren boughs,
Learn fruitfulness!

—Margaret Wilkinson.

New Thoughts for Parents

THE word "psychology," even after we've learned how to spell it, preserves an air of mystery. As for a "psychotherapist," it's easiest to think of such a strange creature as looking like our fancy of an old astrologer—long beard, skull cap, magic spells, muttered incantations, occult signs and the rest of it.

As one goes along and meets a few of these modern gentry with clean shaven faces and rather ordinary features, and hears the plain common sense that they talk, it appears that there's nothing so incomprehensible about their teaching and that much of it is an every-day matter touching helpfully upon the phases of everyday life. To our surprise we find that we've known a lot of it in a vague sort of way all along, but haven't thought of making practical use of it.

They Bring Us a Message.

A message for every parent lies in some of the things they are seeking to bring home to us. For instance—we are told that the principal cause of all nervous breakdowns has its origin in the wrong treatment of the child by his parents. "I wish someone had thought of that when I was a child." Every adult voices this sentiment at times, but without thought of laying the blame upon anyone in particular, for good parents of that day did the best for their children according to their lights, just as the parents of today should be doing.

We know that as parents, teachers and guides, we fail in many ways and thus lay the foundation for failure in the impressionable young creatures confided to our care. What has the new science of psychotherapy to say about just a few of the more important things which we should keep in mind from the child's nursery days on through life?

Never Let Fear Take Root.

We learn with pleasure, that no sense of duty need urge us to be severe with the timid child. Such a one can hardly be treated too tenderly. One of the racial primitive forms of fear is dread of the unknown. This is the fear that results in "seein' things at night." You've probably seen them yourself. Fear of the dark is the most general manifestation of this particular dread. Give the nervous little child a night light in his room.

Perhaps you can recall your terror when forced or ridiculed into some form of childish daring, patting the monster horse, walking all alone past the horned cow or, worst of all, having your protesting little body thrown into deep water to swim or sink. Today the psychotherapist warns against all such parental effort to overcome fears. They should not be ridiculed, condemned or too greatly belittled.

Outwardly good results may be produced by insisting upon obedience to commands that frighten the child, but later life often discloses to the analyst a well-nigh unhealable hurt to the nervous system. Even in adult life, the numerous cases of shell shock resulting from the incredible violence which soldiers were forced to do to their natural feelings of dread, proves that it is not the child alone who is susceptible to this form of nervous reaction.

With the older child, sympathetic reasoning will be a help, but first and foremost, the "scary" small child of nursery age should be unobtrusively humored and made to feel safe at all times so that active fear may have no opportunity to take root.

The "Look-at-Me!" Child.

Treatment should be quite different in the case of the child who develops what is known as "sensation-mongering" in an excessive degree. Remember that only the excessive development requires any particular notice,

for the inclination to attract attention, and its indulgence to a certain extent, are perfectly normal and natural.

Children who exaggerate tales of their own prowess, of the dangers they have passed through, of the hurts they have suffered, should be greeted, not with the feigned surprise and interest we accord to their simple instinct for dramatics, but with a matter-of-fact indifference. If children fail to produce the desired effect, they soon tire of the effort to create a sensation.

The craze to attract notice by fair means or foul is more usual in the lonely or only child. Often very naughty things are done just to force attention to themselves. The key to this annoying situation is to act on the suggestion that "the child who has adequate opportunity for achievement will lose all interest in creating a sensation." Here is a golden opportunity for the parent to provide some useful or harmless form of self-expression for the child.

Truth Is Wiser Than Fibs.

In a field where parents of what is known as the Victorian age felt no hesitation as to their line of action—which was a practical ignoring of the sex question—down through the second generation of parents who did hesitate and so were lost to all wholesome action, we come to the present-day parent who is far more inclined to recognize that curiosity about sex is inherent, natural and by no means blameable even in the small child.

Usually this curiosity is first manifested in the question "Where did I come from?" or "Where did baby brother come from?" The sensible advice of today is to tell them quite simply how all children are born of their mothers. Very young children accept the information as a matter of course and, as has been wisely said, it is difficult to see how this knowledge could hurt anyone.

If children are rebuffed or made to feel that the subject is a mysterious one and that their inquiry is regarded as something naughty or indelicate, their interest centers upon it. They may ask no further questions for a long time, but never again can they approach such matters with the same open innocence.

The God of His Fathers.

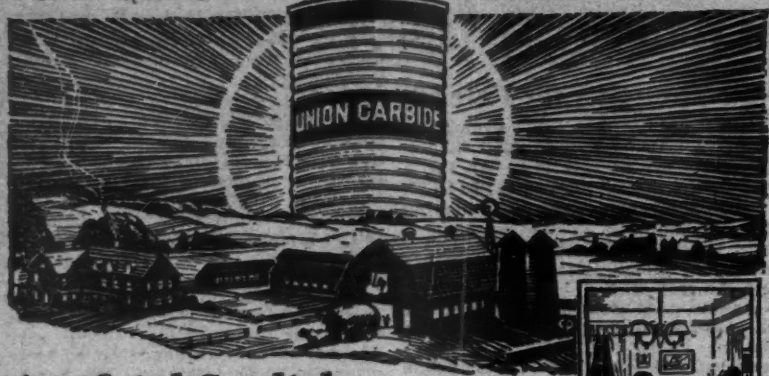
Even the sketchiest survey of a few of the innumerable points of interest, requires some consideration of the religious influences a child should have. Some who hold the modern trend of thought which urges the fullest opportunity for self-realization, feel it difficult to mingle religious instruction with the ideal of non-interference with self-development.

Into this puzzle the psychoanalyst steps with good sense and good cheer. Religion, he says, is natural to all mankind. Your child is going to have some sort of religion. He will surely be affected by parental example, and the God he worships will likely be the God of his fathers, "whether that deity be money, success, or intellect, the Jehovah of the Hebrews, or the God of Love."

Your teaching will have far less effect upon him than your life. From you he will assimilate his sense of values both religious and ethical. "These children of ours are busy building, or preparing to build, their respective temples. From us they will get the material at least, if not the plan, and on us in large measure devolves the responsibility—whether it be a temple of the living God, or a temple of the unknown God, or a temple of Bacchus."

"I don't see how people can make up their minds to keep house cats. Horrid things! always rubbing up against one's skirts." Thus the complacent hostess to the frate guest whose new dress has been simply ruined where Madam's darling little doggy paws set his muddy paws as he welcomed her on the front steps.

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CHATS WITH FRUIT GROWER'S WIFE

By HAZEL BURSELL



Using Commercial Patterns

SELECTION of the pattern is the first problem. First consider the type of dress and the material from which it is to be made, then pick a pattern that seems to be designed for that type of garment—this appropriateness of design to material is a big point. Another thing to remember is to pick a garment which appears on a figure something similar to your type. By this I mean that no little short woman should try to "kid herself" into thinking that she will look in a dress designed for a tall figure, just as the tall woman wearing it looks. Consider then, in selecting the pattern, your material, occasion and your own figure.

Use of Commercial Pattern.

Study the pattern and notice the number of pieces, whether or not seams are allowed, notches for joining, perforations for folds of material, and perforations for straight of material. Try also to get a general idea of how the pieces go together before laying them on and cutting. Press the patterns if necessary, using a warm iron.

Then lay the pieces of pattern on the goods, taking pains to have the pieces which call for straight of the material lay that way, and edges to be on folds arranged on folds. Lay the pieces on the goods so as to economize in cutting as much as possible. Never cut into the material until all pieces are planned for. Put away all extra pieces of pattern, to avoid confusion.

Altering Commercial Patterns.

Few figures are perfect and normal in all points, so that most commercial patterns have to be altered in certain places to suit them to the variations of the individual figure. These alterations should be planned for before any cutting is done. There are certain definite steps in making these changes.

If the waist is too small, add fullness by laying a pleat in the material, falling straight from the middle of the shoulder to the waist. Or split the pattern in the same place and spread to allow for greater width. Then if the waist is too large, take a pleat in the pattern in the same way as described above for the material.

Should the waist prove too long, take a tuck in the pattern 1½ to 2 inches above the waist line. To lengthen the waist take a tuck in the material in the same way.

If the sleeve is too long take two tucks in the pattern—one midway between the elbow and the wrist, and one midway between the shoulder and the elbow. To lengthen the sleeve, take tucks in the material in these two places, being careful to allow just enough in the tucks to give the length desired.

A straight skirt may be lengthened or shortened at the bottom, but a gored skirt should be altered for length at a point 12 to 13 inches below the waist line. Make alterations in width of the skirt at the hip seams or lay tucks through the center of the gores.

Placing and Cutting.

After the alterations have been arranged and each piece planned for and laid carefully according to folds or straight of the goods we may proceed with the marking and actual cutting. All plaids and stripes should be carefully matched wherever possible, and this should be borne in mind when laying the pattern.

Now pin the pieces in place carefully. Next mark all notches with a contrasting-colored thread—never notch the goods as it might hinder in fitting or remodeling. Seam lines may be marked if the seamstress desires. Mark all necessary dots also.

We are now ready to cut out the garment, knowing that it will come out just as it should, and not only be easy to put together but will "look" right when finished.

The Handy Washroom

THE washtub need no longer be the symbol of drudgery to the housewife, for with a little knowledge and money she can secure equipment that will insure beautifully white clothes without the back-breaking toll that has for centuries made wash day "Blue Monday." The expense of equipping a family laundry may seem heavy at first, but it is as nothing compared to the service it gives.

Besides, Mother has a right to something in addition to a tin tub and wash board with which to do the big family washing. No one would expect Dad to use a hand scythe in place of a power machine, and yet Mother—that unselfish heart of the home who should conserve her strength for better things—can go on using "Stone Age" equipment.

Need Special Laundry.

First, a separate laundry room should be provided, either in the basement, a special room, or a wash house. This room will be found valuable for many other things—in fact, on most farms it becomes so valuable for other things, that there is hardly room in which to wash. If the basement is used, it should be clean, light and airy and should have a cement floor if possible.

Get away from using the kitchen as a laundry room. The steam is kept in the room, and the house gets a "laundry" odor. The housework is also interfered with. Water may be spilled on the floor, necessitating some more hard work for mother. Then too there is no place to store the equipment.

The wash room should be equipped with running water, at least cold water, and hot if possible. If the house has no hot water system, then the wash room should have a stove on which to heat water. An old stove will serve very nicely, and with it installed, the room may be used as a canning house in the summer. It will be a real joy not to have to heat up the kitchen with every bit of fruit canning.

Tubs will probably head the list of equipment. Stationary tubs are the best—two of them side by side with the water faucets above, and piped to carry off dirty water. Enameled tubs are pretty and easily cleaned, but they chip easily and are expensive to install. Porcelain tubs are very expensive, and not especially easy to clean. Tin tubs rust easily, while the galvanized type is inexpensive and will give good service. Concrete tubs will be found very satisfactory, if it is convenient to install that type. Then there is a composition soapstone or slate tub, which is inexpensive and easily cleaned. The housewife should choose the type which will give good service, is within reach of her pocket book and is easily cleaned.

Almost any good washboard, with no rough corners or "catchy" spots on which to hurt the hands or tear the clothes, will be satisfactory. The most common types are brass, glass, and galvanized tin. Some kind of a boiler will be necessary. It may be of copper or tin with a copper bot-

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tom, and should have a tight fitting lid. With proper care in emptying and handling either type should last for years. They may be soldered when they spring a leak.

Buy Only Good Wringers.

Never buy a cheap wringer, as it must stand hard wear. Get a good one and then take proper care of it—the ball-bearing type is best. Cover the wringer each time after washing to keep it clean, and oil when you are through using it. Never leave the rolls tightened up as when in use, as the rubber will become flattened on the sides pressed together. New rubber rollers may be purchased when the others are worn out, but this should not be necessary for years.

Some sort of a clothes basket is necessary, and one with wheels on will save much strain on the back in carrying clothes. Reed baskets are strongest and best, but expensive. Splint baskets are very good. Canvas carriers which fold up, have many good points. They are light and easily washed and have pockets for clothespins.

Laundry bags and clothespin bags are also essentials. The clothespin bag may be in the form of an apron with a big pocket in the bottom for the pins. It should be of some strong, heavy material. The laundry bag should be of a firm, washable material such as natural colored linen, or cretonne. It should be opened with a drawstring at the top. The clothes lines should be of galvanized wire, put up permanently. The revolving clothes line saves many steps.

Perhaps the most important item is the washing machine. There are so many types and makes, each with special features stressed in the advertising, that it is hard to choose. The

three general types are hand power, water power, and electric machines. The last is the best if electricity is available at reasonable rates, while the water power is efficient if running water is at hand. The hand power requires some muscle to operate, but it beats the old-fashioned washboard by a mile. Do not let the machine dry out between washings, and be sure to keep it well oiled.

Steady, Well-Padded Board.

An ironing board is another essential item. One which folds up in the wall is handy, and easily installed. It should be the right height for comfort and should stand steady. The "prop" under the outer end should be far enough back to allow garments being slipped over the board for ironing. It should be well-padded and smooth, and should have a plain flat surface. It should have a washable, removable cover which may be tied on with tapes or tacked on (latter not so good). The cover may be of worn linen, old sheets, or heavy canvas. Use an iron stand to prevent scorching.

A good set of irons—smooth, clean and of a type that retains heat well—is essential. Of course, nothing can compare with an electric iron for real comfort and service. It is well to have plenty of irons, if the heated-on-the-stove variety is used, so that hot irons will always be available.

Some sort of a clothes sprinkler is useful. A perforated-top bottle is excellent, but a whisk broom will also serve nicely. A knife for cutting up soap, jars for washing soda and stain removal preparations, and a pan for making starch are also essential pieces of equipment.

Here's where we begin the emancipation of Mothers on Wash Day!

Pickle Recipes

THIS is the season for putting up all kinds of savory pickles, catsups and sauces to add zest to the winter menus. Now is the time to take care of all those surplus fruits and vegetables, converting them into winter goodies. Here are some tried-and-true recipes.

General Proportions.

Brine for storing should be strong enough to bear up an egg.

Brine for over night (1 c. salt and 1 gal. water).

Spice for pickles—
1 T. cinnamon. 1 in. ginger root.
8 or 10 cloves. 1 qt. pickles.

Sweet Cucumber Pickles.

200 small cucumbers, 3 qts. vinegar.
2 oz. cinnamon. 2 oz. allspice.
2 oz. cloves. 8 lb. brown sugar.
Few small red peppers.

Wash the cucumbers, put them in salt water and let them stand over night. In the morning drain them, wipe them dry and put them into the vinegar to which the sugar and spices have been added. Boil them about 5 min., pack in sterilized jars, cover with the boiling vinegar and seal.

Dill Pickles.

100 medium size cucumbers.
5 stalks dill.
2 T. peppercorns.
4 bay leaves.
1 c. mustard seed (if desired).
3/4 c. horseradish cut in small pieces.
1 qt. vinegar.
2 c. salt.
Few grape or cherry leaves.

Soak cucumbers in brine over night, using 1/2 cup salt to 1 gal. water. Boil the rest of the water, the rest of the salt and the vinegar. Cool. Drain the cucumbers and put in glass jars with layers of dill, cherry or grape leaves, mustard seed, horseradish, and one red peppercorn to each jar. Cover with the vinegar brine and seal at once.

Sour Cucumber Pickles.

Small cucumbers, wash and let stand in salt water over night. Drain, rinse and pack in sterilized jars, adding a few red pepper pods and a few whole spices, cover with boiling vinegar and seal.

A small amount of brown sugar may be added.

Olive Oil Pickles.

100 small cucumbers sliced thinly.
1 qt. small white onions, sliced.
Sprinkle vegetables with salt, let stand over night, then drain and pack in sterilized jars. Pour over them a dressing made as follows:
1 pt. olive oil.
1 oz. celery seed.
1/2 lb. white mustard seed.
2 qt. vinegar.

Mix seasonings with oil, gradually add the vinegar and pour over the cucumbers in the jars, covering them well.

Pickle Chips.

Put 1 gal. medium size cucumbers in stone crock; add about a handful of salt into enough boiling water to cover them, turn it over the cucumbers, and cover

closely; do this three mornings, making fresh brine; the third morning repeat the same and pour over. Then take the cucumbers out and slice thin and wipe dry.

Allow 1 c. white sugar and 1 pint of cider vinegar to 1 qt. of sliced cucumbers. Boil vinegar and sugar with a small lump of alum, small pieces, white mustard seed, a little cayenne pepper and a few small red peppers. Pour over the cucumbers, boiling hot, cover closely and let stand 24 hours. Reheat the vinegar and pour over the chips for 3 mornings and on the 4th morning reheat the vinegar, put in chips and boil together. Then take it off and seal in glass jars.

Sweet Green Tomato Pickles.

1 peck green tomatoes (sliced and cored).

1 cup salt.

Sprinkle tomatoes with salt and let stand over night. In the morning drain off brine and scald the tomatoes for 15 min. in 2 qts. of water and 1 qt. vinegar, then drain.

Make a syrup of 1 gal. cider vinegar, 6 cups brown sugar, 5 to 6 peppers shredded and the following spices in cheese-cloth bag—1 T. white mustard seed, 1 c. cinnamon bark, 1 T. celery seed, 1 T. whole cloves. Add tomatoes to this syrup and let the mixture simmer one hour.

Pickled String Beans.

Select tender beans, remove tips and strings. Make brine in the proportion of 1/2 cup of salt to 1 cup water, cover beans with this and let stand over night. In the morning drain, rinse, and dry them. Pack beans in sterilized quart jars adding a few chili peppers to each jar.

Prepare vinegar as follows: To each quart of vinegar add 1/2 cup brown sugar, 1 t. whole mustard seed, 1 t. celery seed, then bring to boiling point, fill jars with hot vinegar and seal.

Cauliflower Pickle.

Place in salted water, head downward and let stand 1 hour. Break flowerets apart and trim stems. Cover with boiling water and let cook 6 min., drain in colander and pack in jars.

Dressing—

1 qt. vinegar heated to boiling.
1/4 c. mustard.
1/2 c. sugar.
1 t. tumeric powder.
1 1/2 T. flour.
1 T. white mustard seed.
1/2 T. celery seed.

Mix seasonings well, add enough of the vinegar to make a smooth rather thin paste, add this to the rest of the hot vinegar, stir it until it begins to boil and let simmer 10 min. Add 1 T. of olive oil and pour the dressing over the cauliflower in the jar. Button onions, slices of green tomatoes, tiny cucumbers and thick slices of large cucumbers may be used with the cauliflower.

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Pruning Bulletin

DR. W. H. Chandler, for many years head of the department at Cornell University and now with the University of California, Berkeley, is the author of Bulletin 415, published by Cornell Agricultural Experiment Station, Ithaca, N. Y., entitled, "Results of Some Experiments in Pruning Fruit Trees." Dr. Chandler has been investigating this subject a great many years and is recognized as one of the best authorities on pruning in America.

It is impossible to give the complete summary of this bulletin owing to the many subjects treated and the elaborate tables. The following summary, however, will be of interest to our readers:

The results reported in this publication were obtained by means of experiments with trees none of which were more than 12 years old. Such results give little information as to the response that might follow pruning of older trees.

Pruning away a part of a tree seems to cause more vigorous growth of the part remaining, the increase in vigor being greatest near the point where the cut has been made. This increased vigor seems to result from the fact that the tree is left smaller, while the root system, which must supply water and mineral nutrients, is temporarily as large as if no pruning had been done. The resistance to water movement in the tree may also be reduced temporarily by the pruning, but there is little knowledge as to how much effect this resistance has on the supply of water-reaching the growing points.

In spite of the apparent increase in vigor, pruning a young tree is a dwarfing process. The tree is nearly always reduced in size by more than the amount of wood cut away in pruning. This is because pruning reduces the leaf surface, and therefore the possible production of materials necessary for growth. The efficiency of the leaves in producing material for growth may also be reduced. Root growth is generally reduced strikingly by pruning. The invigorating effect of pruning, then, is temporary, lasting only until by reduction in growth the root system comes to be no larger in proportion to the top than it was before the pruning. Pruning reduces the amount of fruit borne by trees that have not reached maximum bearing size. With some trees that fruit terminally on spurs, such as the apple and the pear, the reduction in fruiting is greater than the reduction in growth.

The foregoing conclusions are from experiments in New York. The results of these are in agreement with results obtained under a number of different climatic conditions. It is not improbable, however, that a combination of soil, climatic, and cultural conditions might be found in which pruning, especially cutting back, would not dwarf the young tree nor delay fruiting. Fruiting dwarfs the tree to a greater extent than does moderate pruning, and therefore after a few years of fruiting unpruned trees may be no larger than trees receiving a moderate amount of pruning. However, they will be larger than trees that have had much pruning, particularly much thinning-out of the top. With some fruits, such as the peach, an age is soon reached when annual cutting-back increases the vigor of growth and the size of the fruit and prolongs the life of the tree. It is possible that with all fruit trees an age is reached when such renewal pruning is desirable, but that age has not been learned, even approximately, for most kinds of fruit trees. Pinching off the growing point of a twig in early summer or in mid-summer may cause a fruit bud to form just back of the point of pinching. Ordinary pruning in summer does not hasten maturity but delays it and does not stimulate fruit bud formation. Summer pruning dwarfs the trees more than does equally severe dormant pruning and seems to reduce the fruiting more, at least where the growing season is as short as in New York. Where

the growing seasons are short, any large amount of pruning reduces the resistance of trees to low temperature in the winter following. Early summer pruning delays maturity, and late summer pruning reduces the leaf surface late in the season when it is needed to ripen the wood; so pruning at either season should reduce resistance to low temperature more than would equally severe dormant pruning. The removal of large branches, or rather severe cutting-back of branches, in late autumn or in winter seems slightly to reduce the ability of the tree to withstand very low temperature. However, this can be of practical importance only in sections where winter-killing of the variety concerned is reasonably common. When only a very small amount of wood is removed, as in cutting out small crossing or interfering branches, the work may safely be done at any season of the year.

The pruning necessary to train a young tree to any form different from that which is natural to it dwarfs it and delays its fruiting. With most varieties, if the removal of undesirable branches moderately low on the trunk or main branches, and the thinning-out of branches to let in the light, are delayed until the trees are old enough to fruit heavily, more growth and larger yields while the trees are young will be secured. Under the climatic conditions of New York, it is seldom, if ever, necessary to cut back young trees in order to secure a strong framework with low branching; and such pruning reduces the size and the fruitfulness of young trees.

The foregoing summary is of the general response of young fruit trees to pruning, as indicated by the experimental evidence now available. However, different fruits and different varieties of the same fruit do not respond to pruning alike in all ways.

Weak Crotches

MANY apple trees are ruined because of weak crotches which give way with the first heavy fruit crops. Fruit growers interested in this subject should read Bulletin 419 of the Cornell Agricultural Experiment Station, Ithaca, N. Y., entitled, "The Apple-Tree Crotch," by L. H. MacDaniels. The summary of this bulletin will be of interest to our readers at this time:

The strength of apple-tree crotches varies directly with the width of the angle between the crotch arms, other factors being equal. Crotches with equal arms split much more easily than those with arms of unequal size, other factors being equal. More than two scaffold limbs coming from the trunk at nearly the same point may produce a weak union because the crowded condition prevents the wood of the main trunk from supporting the side branches. The wood of one branch merely lies adjacent to that of the branches on either side, instead of being embedded in the main trunk. The critical age at which crotches break is just as the tree is coming into heavy bearing. The crotches of older trees tend to become strong due to an equalization of growth and the consequent firm knitting of the crotch tissue.

Most defects of crotch structure can be remedied or prevented by pruning while the tree is young. With older trees, bracing is advisable, and in case of winter injury to the crotches, this treatment is necessary if the trees are to be saved. Histologically, crotch tissue differs from the normal in having more parenchyma, larger medullary rays, and fewer wood fibers and vessels. All of these tissues are very much distorted in their arrangement as compared with the normal tissue, a distortion found also in the cambium itself. There is a more or less definite line of cleavage where the tissues of the two branches of a crotch lie adjacent. The lines of conduction for the two limbs of a crotch are separate and distinct. Tissues of both the bark and the wood of a crotch have, by analysis, a higher nitrogen content.



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California Rootstocks

(Continued from page 6.)

the Mahaleb will reveal no such bitterness. The bitterness of the Mazzard is so profound that it is practically impossible to keep the bark in the mouth for any length of time. This bitterness is caused by a chemical known as phloridzin. It is present in large amount in the Mazzard root but only in traces in the Mahaleb.

Rootstocks for the Peach.

Nearly all the peach trees grown in California are on peach roots. Most of the remaining trees are on the almond, a few being on the Myrobalan and apricot. A new rootstock that gives promise of adapting the peach to soils that are alkaline in nature is the Davidiana or Chinese peach. This root seems to be able to stand more alkali than either the common peach or almond root.

Being a surface feeder, the peach root does well in the more shallow soil locations where the bedrock or hardpan come within a few feet from the surface. As the peach endures a greater degree of moisture than the almond, especially in locations under irrigation, or in locations where the water level comes near the surface, it seems to be most favorable. The almond root seems to be more preferable on high, dry locations of good soil depth, and where drainage conditions exist.

The methods used for separating the peach root from the almond root have already been discussed so it will be needless to repeat again.

Rootstocks for the Plums and Prunes.

The question of proper rootstocks for the plums and prunes has always been a perplexed one. This is due to the fact that certain varieties show affinity towards a certain stock and others do not. This matter is now settled to a certain extent. Through the observations of growers it is now known what varieties are congenial towards the different stocks. The three most important rootstocks now used are the Myrobalan, peach and almond.

The Myrobalan is a hardy, thrifty grower, a deep feeder and thrives well in heavy soils or on locations subject to a short period of excessive moisture. The conditions most favorable to this root are deep, rich, black or sandy loam (such as bottom land location), or a deep, fertile, heavy, black soil.

For the drier, gravelly soils, the peach or almond is used. Where the soil is shallow and extremes exist in water conditions, the peach is the better stock. If the soil is particularly adapted to the peach root it should be used rather than the Myrobalan, although the latter is the best all-round stock. One objection to the peach is that all plums cannot be worked on it, for example—Kelsey, Santa Rosa, Diamond, Yellow Egg and Robe de Sergeant. On soils too dry for the peach, the almond root does well. It has the same objections as the peach, namely—all plum varieties cannot be successfully worked upon it. The methods used for separating these roots are as follows: the Myrobalan root always possesses a characteristic brown color; the peach and the almond are separated from the Myrobalan root by not having this color. Methods of distinguishing the two roots have already been discussed.

The following table, taken from a survey of the State's nurserymen made by Dr. W. L. Howard of the California Agricultural Experiment Station, gives the percentages of trees propagated on the different stocks during 1919:

Fruit.	Stocks.	
Almond	Almond	67.3%
	Peach	32.7%
Apricot	Apricot	49.1%
	Peach	27.2%
Cherry	Myrobalan	28.7%
	Mazzard	78.8%
Peach	Mahaleb	21.2%
	Peach	98.8%
Plum	Almond	1.3%
	Apricot	4.4%
Prune	Myrobalan	62.4%
	Peach	31.6%
	Apricot	4.4%
	Almond	1.6%
	Myrobalan	63.3%



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healthier orchard in the South or one that had produced as many dollars for its owner."

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Peach 21.2%
Almond 10.4%
Apricot 5.1%

Another survey is being made at the present time and it is hoped that the results therefrom will be shortly made available to the horticultural public.

Burlap Around Trees

I have had burlap around my young fruit trees all summer to prevent borer infection. Should I remove this in the fall or can I leave the trees as they are all winter?—O. S. N., Ark.

BURLAP or any other material which does not allow free movement of air around the tree should not be left to remain all fall and winter. The reason for this is that a covering of this kind tends to make the bark and other living portions of the trunk very tender. Then when cold winter weather comes, these tender parts are easily injured by the cold, often resulting in frost cankers. This injury may sometimes be very severe, with much splitting of the bark which will allow access to various insect and disease enemies. From the standpoint of borer control, burlap will offer no protection after late summer, since no eggs are laid after this time. If you use it, therefore, remove in late summer or early fall.

Some people who are too nervous to endure any noise, never wince at the unceasing sound of their own voices.

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That Association of Yours

by Tim and John

Responsibility and Compensation.

ONE rainy spring day as John was busy in his shop greasing harness, Tim appeared in the doorway, his expression a curious mixture of sheepishness and suppressed happy excitement.

"What's up, Tim?" queried his friend, anxious to relieve the embarrassment.

"Remember phwat yez was sayin' regardin' the wimen a-gettin' that weary packin' apples all day and thin feedin' the help bechune times by way iv a rest? Sure its occurin' to meself that it's a movie Mary ud enjoy over to Phoenix and it's yesilf and Susie goin' along ud get her consint."

"I'm sorry, Tim," hesitated John, "got an association meetin'. But," he added, noticing Tim's utter dejection, "tell you what, we'll all start out together, you leave me down at the Corners and go on with Susie. Stop for me when you come back."

"Seems loike yez're foriver havin' thim meetin's. Ivery toime I'm wantin' yere company there's wan of thim—"

"Get out, Tim," interrupted John, "this is the first time you've done anythin' like this in years."

"Besoides," went on Tim, ignoring the interruption for reasons of his own, "we'll be gettin' back and be waitin' for ye. Niver gettin' out 'til the black iv the night."

"Sure we will. Secretary said when he called up to tell me of the meetin' that it'd start prompt eight o'clock and if it wasn't over at 10:30 the president was goin' to adjourn it."

"Ain't ye niver lettin' a meetin' go by and not goin' to it?" said Tim, still hoping to get John to accompany him.

"I oughtn't to," replied John firmly, maybe I'm different than some of 'em, but I felt joinin' the association it was up to me to attend meetin's, to take part, make some suggestions even though most all I've made are foolish. But then, the feller that had that idea of quarter-inch sizin', everybody called him foolish, but it's one of the biggest things the association's done. Now is the first time I ever had a chance of makin' any suggestions and I don't want to miss it."

"Is iverywan agreein' to phwat ye'd be sayin'?"

"No," said John, "but when anyone does suggest somethin' we talk it all over, and when it comes to a vote the majority rules."

"And is this majority rule always to yere loikin', John? Ain't it pleasin' to yersilf to be actin' independint at toimes?"

"Well, there may be somethin' in that, Tim, but the judgment of the majority of such men as we got in our association, is pretty sure to be safe and that's another part of my duty to fall in with what the majority says."

"It's dawnin' on me moind there's some'at to this, John. I'm thinkin' if I'd be joinin' yer association I'd be only responsible for the growin' the foineest fruit I could; pickin' it careful like and gettin' it to the packin' house in foine shape. Now I'm comprehendin' that a man has ither duties, more so about attendin' thim meetin's and sich. But, John, what do ye be gettin' out of it, with all this thinkin' and doin' and attendin' meetin's?"

"Well, some of the things are kind of selfish, Tim. In the first place, I like bein' in business with some of the best fruit growers in town. I feel safer bankin' on their judgment and experience."

"Sure, and do they be tellin' yez all iv thim little quirks iv growin' foiner fruit?" asked Tim.

"Why, of course," said John, "the time's gone by when a feller gets anywhere by keepin' a bright idea to himself. There's another thing I get out of the association. I'm sure of gettin' the whole season's average price for my fruit. Don't have to

speculate and I know no one else is speculatin' with my fruit either. 'Cat-aract' Brand is bein' shipped every week in its proper season: maybe it'll sell better out of storage; maybe it'll sell better in the fall, but anyway, I get the average of all—that's pretty good insurance."

"But ain't yez loikin' the sellin' of yer own fruit, playin' wan buyer against another, now and then?" inquired Tim.

"I am all off of that," said John. "Mostly the buyers play us against each other. Last deal I made with Schwartz he told me he'd pay me so much if I wouldn't tell nobody; come to find out I got 10 cents a barrel less than anybody in town."

"Sure ye was tellin' me, John, that some iv thim things yez're gettin' out of that association was moighty selfish. Be tellin' me, John, is anythin' not selfish about it?"

"Yes, there is," said John, "and I don't know but that's the finest part of it. There's somethin' satisfyin' about bein' a part of an organization to develop this fruit industry. It's a big job with thirty-five to forty thousand carloads of fruit bein' shipped out of Western New York every year and there bein' so much confusion about it."

"Faith, and phwat's eatin' ye, man, ain't it wan moighty foine wurd after all?"

"Yes," replied John seriously, "but, Tim, somethin' must be the matter when peaches rot on the ground and millions of people within three hundred miles of here can't afford to buy 'em. Good apples were drawn to the cider mill last fall, and in the city they cost as much as oranges that have to be shipped 3,000 miles."

"I'm knowin' nothin' about that," said Tim, "but it's far from the poorhouse ivry wan has been in this vicinity savin' it be last year."

"Are you sure of that, Tim?" questioned John. "Have you been makin' money for the last five or ten years?"

"I have that, John, and yesilf has too. There's yez're new autymobeel ivry three years or less, a tractor or two bechune times, it's after bein' the loikes of four years past ye was puttin' yere water system in, besoides payin' for yere farm—Mither o' Mike, phwat more could yez be askin'? And the loikes of ye actin' dissatisfisid so suddin loike."

"Maybe that's just the trouble, Tim, you and me've got our farms all paid for. I was down to Cornell, Farmers' Week last winter. Heard one of them Professors talkin' 'bout an investigation he'd been makin' for the last eight years on fruit growin' in Western New York. Seems he'd gone right through a township a-gettin' reports from every farmer that'd tell him what he'd been buyin' and sellin' and how much money he'd been makin'. He had a thousand records, an average of about 110 a year for about eight years. Then he set out to describe the man who be average of all that bunch. Hit me right between the eyes 'cause I was pretty close to average. This average farmer had about 75 acres with 20 acres of bearin' orchard. His farm stock and tools was worth \$18,000 valued on what such farms was sellin' at. He sold off of that farm \$3,000 worth of crops on an average each year for the last eight years. It cost him in labor, seed, fertilizer, spray materials, barrels and the like, \$1,750."

"It's a bit high he's puttin' it," challenged Tim.

"Well, that's what I was thinkin'," said John, "but said he'd figured in there a fair rate of board where the help was boarded in the house and only a fair rate of labor for the wife and children who worked without pay. That's only fair, Tim. You got a family that works; I haven't no family. I have to hire it all. To fairly compare you and me, we've got to figure some-

thin' for your kids same as we did on figurin' the cost of packin'."

"All right," agreed Tim. "That average feller ain't doin' so bad with the \$1,250 he'll be havin' left."

That's what I was thinkin', Tim, until this college feller called attention to the fact that the farms and tools was worth \$18,000 that had an earning capacity of \$900 all its own."

"And how do ye be figurin' that?" challenged Tim. "The farm's nary a bit of good, savin' somewan worked it."

"That's true, Tim, but this fellow could have sold his farm for \$18,000 and put it out at interest. 'Taint so hard to get five per cent interest, then we'd all see that the money invested had an earning capacity. That mean's that this average feller was gettin' his livin' off of the farm and about \$1.00 a day for his work."

Tim shook his head. "They do be sayin' that figures nivr lie, but it's thinkin' I am a lot of liars can figure."

"Just the same, Tim, I'm thinkin' the money we've been makin' is more interest on our property than it's prices for fruit. How'd your boy Mike make out, goin' and buyin' a farm and payin' for it off from it? Unless he was better than the average farmer he ain't got much chance to pay more than \$350 a year. How many young fellers, Tim, have come into this vicinity in the last ten years and made a go of it? I'm thinkin' there's somethin' the matter with this fruit industry and I don't see how we are goin' to make it better except by us fruit fellers gettin' together, pullin' together, and stayin' together."

"Was it onslifishness I hurd ye remarkin' about? Sure it's selfish I'm thinkin' it is," said Tim.

"Well, perhaps it is," said John. "still I've got my farm all paid for and am makin' a comfortable livin', but the point I was makin' is that this fruit industry needs developin'. These of us who've a hand in it, providin' the association idea can help it along, won't be the only ones to benefit. When I lost Ben in that accident, made me think, what was I livin' for, anyway? Was it just to make money, all I could, without regard to the other feller? And it didn't seem to be very satisfiyin'. Tim, but when I began thinkin' that perhaps we was here to make this world a better place to live in, made me feel lots better. If this association idea can do somethin' to make the growin' of fruit a happier job and a more satisfiyin' one for them that's to come, then I'm thinkin' that my little share in tryin' to grow better fruit, bein' a good member, attendin' meetin's and such, is pretty much worthwhile."

"Uh-huh," said Tim, for he was thinking.

Sure enough John was waiting for Tim and the women folks when they got back to the corner after attending the movie that night.

"Phwat kind of a meetin' was ye havin', John?"

"Fine, best meetin' we ever did have; seems the chairman of that organization committee of the Central that spoke over to Phoenix at a district meetin' sorta woke everybody up tellin' about what made a good local association. Hank Shepard kinda took it to heart. Allowed he's been a no good president at all but hereafter he says we're goin' to discuss just one thing at a time. He's goin' to state the proposition as clear as he can and hold us strictly to discussin' it. Then everybody is goin' to vote one way or the other. Said he was goin' to start meetin's on time if there was a quorum present, and anyway was goin' to adjourn night meetin's at 10:30 whether we were through or not. Said it real earnest-like, too."

"Tis sad it is for Hank to be eatin' humble pie," said Tim.

"Warn't no humble pie," said John. "just stated facts. We all think a lot more of him than we did before. Set a good example. Secretary got right up and allowed he'd been pretty slack, too. Surprised us by havin' the list of things we was goin' to take up all wrote out on a blackboard. Seem'

all there was to do, we didn't tell stories much. He'd a table up in front; kept writin' most of the time, took down a lot of the discussion and the motions, too."

"Hivins above," said Tim, "it listens loike wan iv thim revival meetin's."

"Well, 'twas," laughed John. "Joe Brown, the treasurer, jumped up and says, 'Well, boys, you elected me treasurer to keep track of the finances. S'pose I oughta know just how we stand all the time. I don't, but, by jinks, I am going to find out and keep posted.'"

"Charlie Hogan, our representative in the Central, got up as soon as Joe got through and says, 'Guess this is on me, too, neglectin' to tell the Central about those fellers over to Hodgeville wantin' to form a new association.' Said he always liked to go to representative meeting, was always talkin' about such big things as Distribution, Merchandisin' and the like. It was all so new to him, was kinda hard to tell us about it when he got home. Since he got to thinkin' about it, there's lots of things he don't know about the Central he oughta know. Said he was goin' up to the Central first day he could get away and find out. Turnin' to me, he says, 'John, you go along too. What I don't think of to ask, you remind me of.'"

"Sure, John," said Tim, "if I was a member of yere association, it's no officer I'd want to be. Its small thanks they be gettin'. All iv the worryin' and wan illigit earful of fault findin' and complainins', he-soides."

"I was thinkin' of that too," said John, but I guess we all sorta like a little responsibility. I kinda think that the handlin' of our members is sorta fun for Hank. What fun do you get out of drivin' your tractor, Tim?"

"Begorra, it's mostly work" agreed Tim, "but it's sort iv satisfiyin', feelin' the power in the thing and seein' the work it's gettin' done."

"Well that's just the way with Hank. I kinda think its fun for him to feel the power in this association of ours, to know that he's got hold of the steerin' wheel and it's up to him whether it really turns over new ground or just goes up and down the road doin' nothin'. As for the Treasurer's job, Joe was tellin' me after the meetin' that he learned a lot about discounts, said he come to, with a start, when he found that 2% discount 30 days is equal to 24% interest a year; gives him a sense of responsibility to walk into the bank and be able to borrow for the association \$2,000.00 at a wallop."

"Be explainin' where ye're Secretary's enjoyin' loife with all iv the writin's?"

"O, he gets a lot of fun hearin' excuses when he calls up to notify us of meetin's. One member that seldom comes (didn't say who) he allers has the same excuse. Secretary said next time he's going to tell that member to change the record."

"And Charlie Hogan? Is it loikin' the representative job, he is?"

"That's what I asked him," said John, "and he said—really it had been an opportunity to meet men from other locals and now and then hear big men from cooperatives in other parts of the United States. 'Twas inspirin' to be part of a big and growin' machine."

"Think he's grooming you for his place," asked Susie "by taking you along when he goes up to the Central like he said he was?"

"Why, I don't think so," quickly replied John, somewhat startled by the idea. "He did say the job ought to be passed around, and the next man oughta be able to talk about what goes on. Guess I wouldn't qualify if that's so."

Susie's silence as she got out at the gate was more eloquent than words as to what she thought of John's capabilities. As for Tim he even forgot to say "Goodnight" for he was thinking.

PETER LENSON

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Farm Bureau Cooperation

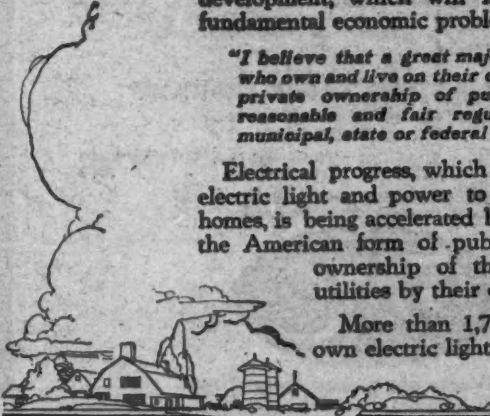
Representing more than a million farm members, O. E. Bradfute, of Ohio, president of the American Farm Bureau Federation, spoke before the 46th convention of the National Electric Light Association in New York City upon the cooperative work being carried on by the Federation, the United States Department of Agriculture and the National Electric Light Association.

After outlining the possibilities of electrical farm development, which will follow the solution of fundamental economic problems, he said:

"I believe that a great majority of the farmers who own and live on their own farms believe in private ownership of public utilities under reasonable and fair regulation, rather than municipal, state or federal ownership."

Electrical progress, which will eventually carry electric light and power to the most remote farm homes, is being accelerated by the development of the American form of public ownership—actual ownership of the securities of these utilities by their own customers.

More than 1,750,000 investors now own electric light and power securities.



NATIONAL ELECTRIC LIGHT ASSOCIATION

American Pomological Society

THE annual meeting of the American Pomological Society will be held in New York City on November 6th, 7th, 8th and 9th, in connection with the Eastern Apple Exposition and Fruit Show. Special rooms have been set aside in the Commodore Hotel, which adjoins the Grand Central Palace, for the use of the society. It is now expected that there will be the largest group of fruit growers ever assembled in attendance at this exposition and the society is planning to put on a program which will merit the attendance of every grower who visits the Eastern Apple Exposition.

Setting Strawberries

STRAWBERRY plants had better be planted in the fall in districts where the soil does not freeze and thaw frequently during the winter. Where freezing and thawing does take place, spring planting is better. After the ground freezes in northern districts, a light covering of straw, leaves or similar material is desirable to prevent thawing during mild spells in the winter.

\$10 to \$15 A WEEK Scores of nursery agents are now soliciting subscriptions for the AMERICAN FRUIT GROWER MAGAZINE as a side line in connection with the sale of nursery stock, and are finding it an easy matter to add from \$10.00 to \$15.00 a week to their income in this way. You can do the same. Write for particulars. AMERICAN FRUIT GROWER MAGAZINE, 543 Monmouth Bldg., Chicago.

Information Wanted

I would like to have every farmer who has used

Nitrate of Soda

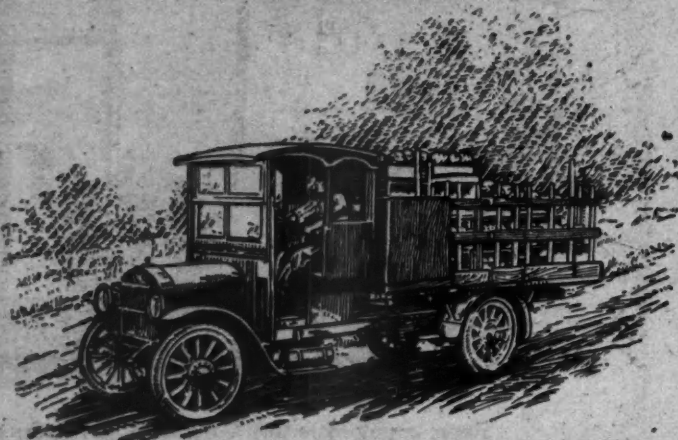
write and tell me his experience, how he used it and what results have come from its use.

My Free Bulletin Service is maintained for the purpose of giving out such reliable information on the proper use of Nitrate of Soda as will benefit all who are using it or are contemplating trying it. In order to do this to the best advantage, I want all the authentic information I can get from those who have had experience in the use of Nitrate of Soda.

If your name is not on my mailing list for these Bulletins send me your address and to identify this advertisement add the number 3057.

Dr. William S. Myers, Director
Chilean Nitrate Committee
25 Madison Avenue New York

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GMC Trucks are "Seven Steps Ahead"

Spraying of Small Orchards

by Charles Olive

THE question is frequently asked whether spraying pays for the average farmer who has only a small orchard. We have found that it pays to spray even the smallest orchard where the trees are barren because of insect and disease attacks. Few farmers, however, have yet much faith in the value of spraying. The only way to convince them that spraying pays is to show them what it has done for others. When a farmer has sprayed his orchard and harvested and sold the fruit, he often finds that he can make more money from his fruit trees than he can make from any other crop on the same space of ground.

Several years ago a man bought a Minnesota farm on which there was an apple orchard of about four acres. The trees were in a bad condition, he soon discovered, and he could not make them produce any fruit. He could not even raise enough apples for his own use, so he began to speculate whether spraying would help matters, and finally got in touch with a neighbor who had some experience in spraying. He obtained the help of this neighbor, and they sprayed the orchard four times that season. The owner of the orchard was skeptical all the time, however, believing that the money spent on spraying would represent so much loss. But in the fall he was surprised to see a nice, clean crop of Grimes Golden apples on the trees. The crop was so large that he began to worry about how he

should be able to dispose of all that fruit. This worry, though, soon turned into joy, for as soon as he made an effort to sell the fruit he found that he could easily dispose of most of it among his friends and neighbors, who did not get any apples that year. When he had sold the entire crop he found that he had received for it \$2,600. The cost of spraying, etc., amounted to \$500, so that the profit was \$2,100, which certainly was a good income from four acres.

There are many farmers who are afraid of growing fruit, because they believe that they will have a hard time selling it. They have a ready market for grain and hogs, but when it comes to fruit, they do not know how to proceed with the disposing of the crop. Such was the case with Richard Peterson, a grain farmer in Kandiyohi county, Minnesota, who had 60 fine apple trees in his orchard. He never thought of growing more apples than for family use, and neglected the trees until finally they did not produce a dozen apples a year. The trees were diseased, and when Peterson finally decided to grow some fruit for the market, he was unable to do so. Then one spring he sent for a man who knew all about spraying, and they sprayed the trees carefully. In August the trees were loaded with fine apples.

Peterson, like the farmer already mentioned, was sure that he never could sell so much fruit. The expert

told him to advertise in the local papers and to sell samples to the home merchants. Peterson did so, and was soon an enthusiastic fruit grower and believer in spraying. He found that he could now not only grow apples, but also sell them. When he sold samples to the merchants he did not forget to leave his name and address so that they could notify him when they needed more apples. He also endeavored to have his fruit clean and well sorted as to quality.

"Now I know that there is money in fruit," he said one day. "Last week I picked 22 bushels of fine crabs from two trees, and sold them at \$2 a bushel. Each tree represents an income of \$22."

Peterson had received \$44 from two trees, and he had at least 55 trees left, most of them heavily loaded with fruit. In all, he sold apples for \$700 from his small orchard. The cost of spraying was \$18. Other expenses connected with the orchard were small, so that the profit from the fruit was large enough to enthrall any farmer.

Spraying not only makes the crop larger, but also increases the size of the fruit. Often sprayed fruit is found to be four times as large as the unsprayed. Last year I saw an apple tree that had been sprayed only in part, for the reason that a deep ditch prevented the spraying machine from doing efficient work on one side. On the branches that had been covered with the spray, the apples were large and fine; but on the limbs that had escaped the spray, the fruit was very small, and not fit for eating. This was a striking example of the value of spraying.

Of course, a farmer with a very small orchard will not find it profitable to buy an up-to-date power sprayer for his own use. Community spraying is the only method that can be employed in a neighborhood where the orchards are small. The spraying machine can be owned jointly by an association or by one experienced man who is hired to do the spraying. A private sprayer charges so much per acre or tree, and guarantees to do an efficient job for the price asked. Where an association is formed, the overhead expense is charged against all members at so much the acre or tree; the time and materials used on each job are charged to the farmer directly. The spraying should be done right, or it will be only half-effective. The co-operative spraying of potato fields, as well as of orchards, has been found practical.

A spraying association can perhaps best be organized through the county agent. He forms the organization with the assistance of a few local men, and the money matters are given into the hands of several members selected for their dependability and business acumen, and they sign a note to purchase the necessary equipment. When this has been obtained, an experienced man should be given the job of running the sprayer.

The sprayer selected should be one that is large enough to do the work required of it. For fruit trees, as well as for potatoes, a power sprayer is the best and most efficient. The high pressure of the power machine makes a fine driving spray that the operator is able to shoot into any part of the tree, with the least waste of labor and material. No machine should be bought that has not been tested out and found to do good work in actual service.

Control of Thrips on Pear and Prune Trees

by C. F. Greaves Carpenter

IT is the ambition of every orchardist to have a first class, marketable product, but in order to realize this ambition he cannot depend upon nature to produce perfect fruit unaided. Care in the form of cultivation, and the intelligent use of insecticides, must be given, if good, healthy trees, and fruit that is free from the ravages of insect pests, are to result. Cultivation will help the tree in many ways

to reach the stage at which it is more able to resist the depredations of injurious insects, than is a tree that has little or no care.

One of the chief insect pests of prune and pear trees is the thrips. The hibernating adults begin to appear during the latter part of February, and as soon as the bud scales are spreading they work their way inside, and feed upon the tender tissues of leaves and flower buds. If their attacks are very severe the buds may be distorted, or present a blackened appearance. Fruit from these blossoms that have been attacked, but not destroyed, will quite possibly be deformed or scabby in appearance, with a consequently lessened market value.

The adult thrips are minute, soft bodied, winged insects, varying in color from dark amber to black, and are equipped with sucking mouth parts. These mouth parts are really elongated to form a tube, in the center of which are bristles. The thrips rest the "tube" against the tissue, insert the bristles through the tube, chafe the tissues and imbibe the sap. It is quite obvious that by being equipped with such a feeding apparatus they would not come in contact with a stomach poison such as arsenate of lead, which might be on the surface of the buds, leaves or tissues in the form of an insecticide.

This is explained by the fact that there are two kinds of insects, the one kind equipped with mouth parts for sucking, and the other with those for biting or chewing. It is, therefore, necessary to employ different methods for checking and destroying these two classes of insects. For insects with sucking mouth parts, such as thrips under discussion, two methods may be employed: The first by using an insecticide which would have the effect of causing suffocation by choking up the breathing apparatus which, in insects, is a series of holes or spiracles along the sides of the body; or by an insecticide that will have a corrosive effect on the skin of the pest. The former control method is the most to be advocated as the latter is liable to burn the trees.

The eggs of the thrips are white and extremely minute, and are embedded by the female deep into the tender tissues of the stem or leaf, and may sometimes be laid in the small fruit. They hatch within a week into small insects which greatly resemble the adults except that they are white instead of dark in color. The young are commonly known as "White Thrips," while the adults are sometimes called "Black Thrips."

These young immediately commence feeding and become full grown in from two to three weeks, when they enter the ground, form a small earth cell, and there transform into adults, remaining in the ground until the following spring.

There are two types of insecticides, the liquid and the dry or dust. The latter has many advantages over the former, chief of these being portability, capability of covering a greater number of trees in a given time, at a less cost per tree, and, finally, if the dust is a fine one it will be distributed in a cloud effect and will be more penetrating than a liquid spray. To sum up, it is a saving in labor, expense, material and time to employ a dust in preference to a spray.

A nicotine dust containing about 1 per cent nicotine will effectively control the thrips provided it is applied thoroughly and at the correct time. Two applications should be given the trees about three weeks apart. The first treatment should be applied when approximately half the buds are open and the second application should be made when the rest of the buds open out. This insures the destruction of all the thrips that may be in the buds. From one-quarter to one-half pound of the dust should be applied to each tree, the quantity depending on the size of the tree. Floughing during the fall will break up the earth cells formed by the young, and help to keep down the numbers for the following season.

October, 1923

Rambles of Horticulturist

(Continued from page 5.)

box, and not infrequently it will produce as many as 300 apples to the box. While harvested in early October, still the fruit has been kept till the following September, 12 months in storage. To do well this variety needs rich ground.

Mr. Staigt said that if he were planting again he would make about three-fourths of his planting Yates and a large portion of the remaining planting Terry.

A block of Shockley trees in the orchard have a very high production record. This is a pretty poor apple but is a heavy producer—185 trees produced 2,300 boxes, which were sold in bulk from 60 to 85 cents a box.

There are 900 bearing trees in this orchard and last year they produced 8,300 bushels. Three times in the last few years this 20-acre block of apples has produced \$11,000 worth of fruit and one year paid on an income tax of \$6,500.

The early apples are put up in baskets but all the other fruit is boxed. This is true of all Georgia apples. Ninety per cent of the fruit is sold in the state, there being a splendid local market, which is a growing one. Good fancy graded boxed apples will range from \$2 to \$2.25 f.o.b., while culls will range from 40 cents to as high as \$1. The freight rate to most of the markets is very low, being only about 10 cents a box.

Mr. Staigt is a good grower. He understands orcharding thoroughly and is making money.

Knows Varieties.

Across the road from the Staigt farm is the orchard of David A. Hesket. This is an interesting orchard to visit, because Mr. Hesket planted the first apple trees in this district. He has a 45-acre farm with a small orchard of 900 apple trees. Like most of the early pioneers, he tried out many varieties to find out what would do best in the district. Among the varieties he has grown are the Yates, Terry, Delicious, Black Twig, King David, Ben Davis, Winesap, Rome, Stayman, Shockley, York, Yellow Transparent, Red June, Early Harvest, Leland Raspberry, Jeffries and Wealthy. While he believes that the Yates and Terry are very good, he thinks there is a possibility of emphasizing them too much, that the Terry may be short lived. He believes the Delicious in his district is a comer and the Wealthy is a surprisingly good apple, as it ripens very early and is an extremely good cooking apple for their locality.

To grow the Black Twig, one needs to fertilize a whole lot, says Mr. Hesket, and he prefers the old Winesap to the Stayman. He has a very fine home place. He has installed a ram which pumps water into tanks for his spraying and he has water in his house under pressure. We regretted that we had such a short time to visit him as he could tell us so much about the district.

C. W. Lane is the owner of the large Sunset orchards at Mount Airy. The oldest trees on the place are now 11 years old. There are 5,000 apple trees and some 3,000 peach trees, four years old. The varieties of apples which he is growing are Ben Davis, Summer Pippin, Stayman, Arkansas Black, Winesap, Yates, Terry and Kinniard's Choice. He said that the fruit exchange at Cornelia found that the growers had over 50 varieties in the district and from all these the majority of the members voted that the varieties which seemed the best for their conditions were Yates, Terry, Stayman, Winesap and Kinniard's Choice.

For peaches he grows both the Belle and the Hale. He likes the Hale very much so far. He had his first crop last year with no brown rot and so far this year brown rot has not appeared. He likes the Hale because, under his conditions, it develops fine color, is of smooth texture, grows to a wonderful size and is a good keeper. He has kept them 11 days in good condition. He believes in dusting for

peaches and has a Niagara duster. He says he feels that with peaches it is more efficient and cheaper and less trouble and so far he has received very satisfactory results, in fact, he has controlled brown rot and other troubles very nicely. He has been warned by experts in the state that as the trees get older he will not find it possible to control brown rot by dusting, but he says he believes that he will have very little trouble from either worms or brown rot, judging from his experience in the past two years.

In his apple orchard he finds that scab is the big problem and must be controlled. He keeps two powerful sprayers, a Bean and a Hardie, to keep his apples in good shape. He believes in using fertilizer. He uses both nitrate of soda and nitrate of lime to give him the desired nitrogen, applying about 4 pounds to the tree. On his peaches he has been putting a little better than a pound of sulphate of ammonia and 3 pounds of acid phosphate.

We left Georgia, regretting that we did not have more time to study the big developments taking place there. To fruit growers all over the United States we will say that during the next 10 years "Watch Georgia."

Farmer Versus Sportsman

(Continued from page 7.)

of illustration, that all goes well from then on (which it probably won't as the deer will keep up their trespassing), I am always three years behind in my income from that tree—what I get in 1925 I ought to have had in 1922. It would take an expert to figure out the loss, but it is certainly a real one.

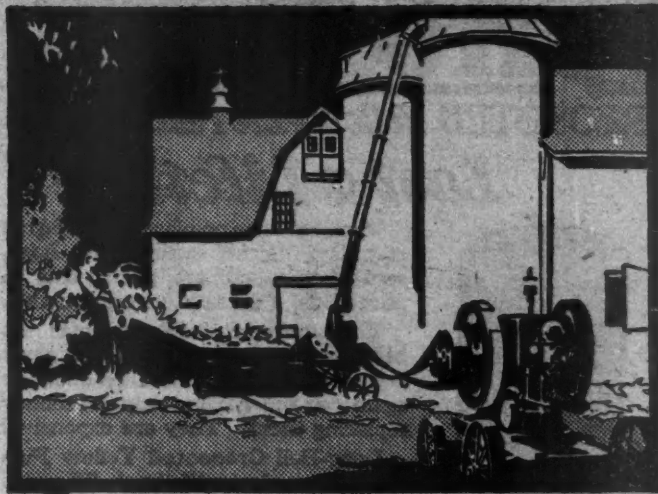
Laws Are Little Protection.

In our Massachusetts law, and in most, if not all other states, there is an apparent protection to the farmer in that he is allowed to shoot the deer which may be damaging his crops. This is all right as far as it goes, but why should the farmer be given this extra burden anyhow? He is busy enough doing his farm work without being saddled with this job for the sake of the sportsman and the nature lover. Moreover, this relief is more imaginary than real. In our case the law provides that "any farmer, on land owned or occupied by him, or with the consent of the owner upon land adjacent thereto may pursue, wound or kill any deer which he has reasonable cause to believe has damaged or is about to damage crops, fruit or ornamental trees." Now that sounds good, for it is a mighty poor farmer that doesn't have "reasonable cause to believe that a deer is about to damage his crops" as soon as he sees that deer within a mile of his farm, in fact, if his experience and feelings coincide with my own, he wouldn't insist on the deer even getting within a mile of his orchard before he began to believe he was up to some devilry.

Moreover this provision that a farmer may shoot a deer on land "adjacent to his own," provided he has the consent of the owner of said land, is a big improvement over the old days (and not so very old either) when all a deer had to do was to jump the line fence and he was safe and could stand and look at the farmer and all the farmer could do in return was to stand and swear at the deer. But the man who thinks that the privilege of killing a deer is about all that is necessary in order to get the deer killed has another guess coming.

If it is true, as our best and most expert authorities assure us, that for the past 20 years the increased production of food in the United States has not kept pace with the increase in population, and that within the next 50 years, if things go on as they have, we will pass from a food-exporting to a food-importing nation, then it is certainly time that all our authorities should awake to the gravity of the situation, and instead of protecting the farmer's foes should give him every possible assistance in fighting them.

As matters stand at present, how-



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ever, when one thinks over the foregoing troubles and other similar incidents, one must certainly agree with Bill Nye's old farmer friend who, after detailing how enthusiastically he had supported the government and how little they had done for him in return, closed with this remark: "And so I say, and I think Congress agrees with me, damn a farmer anyhow!"

PROF. E. J. Wickson died July 16th at Berkeley, Calif., at the age of 75 years. He went to California in 1875 and became identified with the Pacific Rural Press and wrote continuously for that paper for 48 years. In 1878 he became identified with the faculty of the University of California and for many years was head of the horticultural department of that institution. In 1905 he became dean of the college and director of the California Agricultural Experiment Station. He retired in 1913 and devoted his entire energies to writing not only articles for the press but he also wrote a very well-known book entitled, "California Fruits."

During all the years on the Pacific Coast Prof. Wickson played a very important part in the horticultural development in California and his loss will be very greatly felt. The finest monument that could be erected to him is the enduring influence of his work which has left an undying impression on California horticulture.

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Wichita Chicago Philadelphia Los Angeles

Four New Varieties of Peaches

THE bringing forth of a new variety of fruit is a comparatively simple matter, and is to be encouraged. The introduction of new varieties is the basis of improvement of our domestic plants.

An old variety may be propagated for several decades, and there is practically no danger of degeneracy; while on the other hand it is practically impossible to improve its many characters. A variety has its fixed characters and allows practically no alteration. If a better fruit is to be had a new variety must be introduced. So we should not be surprised nor discouraged at the constantly replacing of a variety of fruit for a variety that is more desirable.

The Georgia Experiment Station has recently brought to light four new varieties of peaches. In 1911 approximately 500 seeds from the Elberta variety were planted; all of these seedlings were brought into bearing; and out of this number, four were selected as being worthy of propagation. Two trees of each of these are now in full bearing at the Station, but have not as yet been named. They are known by the numbers, one, two, three, and four; and are described as follows:

No. 1, Yellow flesh, decidedly free stone, medium size seed, well colored, sweet, juicy, slightly like the Elberta in flavor, prolific, and the size of the Elberta, ripening 8 days later than the Elberta; almost immune to scab. This variety has a commercial possibility in that it ripens slightly later than the Elberta.

No. 2, Yellow flesh, decidedly free stone, medium size seed, very prolific, well flavored but moderately juicy, highly colored with red color of skin going slightly into the flesh, ripens 3 days later than the Elberta. This variety tends to overbear, otherwise it is as large as the Elberta, and possesses an attractiveness that is very much desired by the commercial buyer; and is remarkably cold resistant.

No. 3, Yellow flesh, decidedly cling stone, beautifully colored, redness of seed extending slightly into the flesh, sweet and juicy with a well developed flavor, large seed, prolific, as large as the Elberta, and ripens 4 days later. This variety is practically free from scab, and is very promising for home use and the local market.

No. 4, Yellow flesh, decidedly free stone, well flavored, redness of seed extending into the flesh in the form of red streaks, medium size seed, larger than the Elberta, and ripens 10 days later. Prolific, not subject to scab, but subject to brown rot. This variety is not as attractive as the other three, but it possesses commercial possibilities in that it closely follows the Elberta in time of ripening, and may thus extend the harvest period.

The aim sought for in this work was to get a variety that was the equal of the Elberta, commercially, and ripen about 10 days later.

J. G. WOODROOF,
Asst. Horticulturist.

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FOR SALE—PEACH FARMS, TWENTY THOUSAND bearing trees, Fort Valley section, Georgia; fully equipped, high state cultivation. For fine prints, photos, particulars, R. N. Etheridge, Jackson, Ga.

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100 CHAMPION EVERBEARING STRAWBERRY plants, \$2.50 postpaid, \$15.00—1,000; Dunlap Champion, \$4.50—1,000; Gibson, Aroma, \$5.50; Black Raspberries, \$15.00; Concord Grapes, \$30.00; 100 Grapes, \$5.25. 10 assorted Ornamental Shrubs, \$2.50. 10 assorted Perennial Flowers, \$1.75. Roses, 50c. Catalog. Kiger's Nursery, Sawyer, Michigan.

FOR SALE—CONCORD GRAPE VINES, 2 YRS. old, at \$5 per 100, postpaid anywhere east of Rocky Mountains. O. B. Johnson, Schoolcraft, Mich.

12 CHOICE CONCORD GRAPE VINES, \$1. Briercrest Nurseries, Mt. Carmel, Ill.

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UNUSUAL, NEW, DIFFERENT LINE OF QUICK selling repeaters. Attractively packaged and new. With it you can clean up \$50 to \$100 a week easily. Big line—pure food products, extracts, soaps, toilet articles, perfumes, new heavily advertised beauty preparations, etc., put up by old, well established million dollar house. Wire or write at once for territory and details. No capital or experience required. Treasurers House, 10 F-22 Vandalla Ave., Cincinnati, Ohio.

AGENTS—STEADY INCOME. LARGE MANUFACTURER of soaps, perfumes, toilet articles and pure food products, etc., wishes representatives in each locality. Manufacturer direct to consumer. Big profits. Honest goods. Whole or spare time. Cash or credit. Send at once for particulars. American Products Co., 9776 American Bldg., Cincinnati, O.

INSIDE TYRES POSITIVELY PREVENT PUNCTURES and blowouts. Guaranteed double tire mileage. Old worn-out casings will give 3 to 4 thousand miles more service. No tools needed. Just slip inside casing before replacing tube. Will not heat or pinch. Low priced. Agents wanted. American Accessories Co., B-1003, Cincinnati, O.

WANTED—MAN WITH JOURNALISTIC TRAINING to conduct magazine department dealing with plant diseases and insect pests and their control. Thorough knowledge of subject, with ability to discuss it intelligently, absolutely necessary. Exceptional opportunity for right man. Address Box 2711, Tampa.

AGENTS—TAKE ORDERS FOR NEWEST STYLE written guaranteed hosiery. Complete line men, women, children, including silk. Written guarantee with each pair. Pay you daily in advance. No experience necessary. Spare time satisfactory. Write for samples. Jennings Mfg. Co., Dept. 604, Dayton, O.

WE WILL PAY YOU AT THE RATE OF \$3.00 per barrel selling quality lubricants to auto and tractor owners, garages and stores. Sell now for immediate and spring delivery. We have been in business 40 years. The Manufacturers Oil and Grease Company, Dept. 11, Cleveland, Ohio.

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WANTED—\$80-\$100 MONTH. MEN, WOMEN, 18 up. Steady; sure pay; short hours; pleasant. Common education sufficient. U. S. Government life positions. Write today for list. Franklin Institute, Dept. C-104, Rochester, N. Y.

SELL MADISON "BETTER MADE" SHIRTS direct from our factory to wearer. No capital or experience required. Easily sold. Big profits. Write for free samples. Madison Mills, 593 Broadway, New York.

ALL MEN, WOMEN, BOYS, GIRLS, 17 TO 60, willing to accept Government Positions, \$117-190, traveling or stationary. Write Mr. Osment, 260, St. Louis, Mo., immediately.

DISTRICT SALESMEN WANTED—ALL OR spare time. Earn \$1,500 to \$3,000 yearly. We train the inexperienced. Novelty Outlets Co., 154 Bar St., Canton, Ohio.

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EARN \$25 MONTHLY, SPARE TIME, WRITING for newspapers. Exp. unneeded. Details free. Press Syndicate, 870, St. Louis, Mo.

(Continued from page 4.)

[illegible]



When Amherst folk drive home at night from the neighboring city of Buffalo, Novelux Highway Lighting Units make the highways as safe as the city streets.

The lights of Amherst

Amherst, New York, will light all its highways. On 110 miles of main and cross roads there will be a light for every five inhabitants.



If your community is interested in making your roads "ribbons of light," the experience and counsel of the General Electric Company illuminating specialists are at the command of your lighting company or your public officials.

Illuminating engineering has so advanced that, without great expense, country roads can be made "ribbons of light."

Amherst is the first of many towns that will make their highways as useful as city streets—night and day.

GENERAL ELECTRIC

GIVEN WATCH KNIFE AND CHAIN

Real American Watch, 5 year guarantee, fine case, looks and wears like gold. Just sell 12 boxes Mentho-Nova Salve (Wonder Menthol Ointment.) Return the \$3.00 and receive watch of choice of 147 premiums free. Address U.S. Supply Co., Dept. 50-2, Greenville, Pa.

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Takes wonderful pictures. Easy to operate. Both Camera and Ring gives for selling 20 pkgs. beautiful Post Cards at 10 cents per package. All sent Postpaid. EXTRA PRIZE for promoter. ORDER TODAY. D.M. LEE, 39 So. Clinton St., CHICAGO.

THIS AIR RIFLE FREE

For selling 30 pkgs. Chewing Gum at 5c a pkg. Rifle first-class. When sold return our \$1.50 and we will send rifle, all postage prepaid. U.S. SUPPLY CO. 573 10th St. Concord, Cal. Mass.

MYERS "SELF-OILING" WATER SYSTEMS

MYERS Electric House Pump gives you running water anywhere in your home or on your farm. Easy to install, self-starting, self-stopping, self-oiled. In health, happiness, labor and money saved, no equipment pays bigger returns. Dealers everywhere carry a complete line of Myers Pumps, Hay Tools and Door Hangers. See your dealer or write us for catalog.

THE P. E. MYERS & SONS CO.
153 Church St., Ashland, O.

Acetic Fermentation.

This stage of the process should be under control as was the preceding one. The temperature should remain approximately the same. The culture should be started a day or two in advance. To make this culture use equal parts of the hard cider and good well flavored vinegar, that has not been pasteurized, about a pint or quart of each, mix in an enamel or wooden vessel, cover the vessel with cheese cloth and set in a warm room. In a day or two a thin whitish, gelatinous veil-like substance will be found forming over the exposed surface. This is the true "mother" of vinegar, i. e., it is a mass of active acetic bacteria. When this covers the surface use a light splinter to remove as much of it as possible and drop into the cask of hard cider. The splinter being light will float and keep the acetic bacteria on it where they can obtain the needed supply of air.

As in the case of the alcoholic fermentation the cask should lie on its side with the plug out. The opening should be loosely stopped with cotton or else covered with cheese-cloth. The openings through the ends of the barrel near the surface of the cider should also be covered. It might be well to repeat the precaution already given that during acetic fermentation the cask should not be moved nor disturbed unless absolutely necessary. If conditions are favorable the

acetic fermentation will be completed in two to four months. If one has the necessary equipment tests may be made to determine the amount of acetic acid present. Very simple and efficient vinegar testers may be purchased from dealers in vinegar or cider supplies, or the State Experiment Station may be called upon to make the necessary tests. The manufacturer who expects to sell vinegar should consult the laws of his state regarding the state requirements.

When vinegar tests around 5 per cent acetic acid or above the clear vinegar should be drawn from the casks and filled into clean tight casks closely stoppered or bunged and then placed in a cool place for 6 to 12 months to ripen.

Freshly made cider vinegar is deficient in quality, and its color is poor. During the ripening period it develops the aroma, rich color, and high flavor for which it is prized.

The fruit grower who manufactures vinegar for sale will find a local market. He is therefore interested only in the state laws regulating the standard for vinegar. The Federal standard applies only to interstate traffic. The State Department of Agriculture will be able to supply the necessary information regarding testing and standards.

The Federal prohibition law, however, applies to all vinegar manufacturers. The manufacturer must apply to the Department of Internal Revenue at Washington, D. C., for a permit to engage in the business. He who makes vinegar for home use only does not need such permit.

A Few Don'ts for the Amateur.

Don't use dirty or rotten fruit if you desire a high grade vinegar. Don't use unclean barrels. Don't add vinegar or "mother" to sweet cider nor at any time while alcohol fermentation is going on. Don't subject the fermenting cider to any great changes in temperature. Don't use the slimy, leathery mass often found in old vinegar barrels as a starter for acetic fermentation.

Don't forget to supply air by leaving out the plug during acetic fermentation. Don't forget to cover the opening into the barrel with cheese cloth or cotton plug, else complications may result. Don't let the temperature of the cider run above 90 degrees F, as loss of alcohol will result; nor below 60 degrees to 65 degrees F, as rapid fermentation will be checked. Don't disturb the barrel during acetic fermentation. Don't put your barrels of cider in a cool cellar and leave fermenting processes to chance. Keep them in a room where the temperature can be regulated and use starters to control both stages of fermentation.

Wenatchee Observations

(Continued from page 4.)

hand sorting precedes the mechanical grading by weight, as was outlined above, and the speed of operations has reached 800 boxes for each machine in 10 hours. The stock of each individual grower is passed through a machine separately. After being checked, and prior to packing, the fruit of all growers goes into the pool. This plant is well equipped with gravity and belt conveyors for shifting the packed fruit.

Adjacent to the main packing plant is the association's cold storage plant, 110 by 140 feet, containing three floors and affording storage for 200,000 boxes of fruit. The basement floor consists of a slab of concrete, laid upon a 12-inch bed of cinders, and its walls are of concrete. The walls above the basement comprise a brick exterior, inside of which is a tar preparation, then a 12-inch wall of sawdust, and finished on the inside with heavy building paper and shiplap. The original packing house of the association, occupying a separate building, has two mechanical graders. Adjoining is a clay tile warehouse for common storage. Miss Grace Lamphere, association manager, states that while only a small part of last year's apple crop was packed in oiled paper, the entire

output of 1923 will be oil wrapped except possibly the Jonathan and Winter Bananas.

Wenatchee District Co-op. Ass'n.

Wenatchee District Co-operative Association is a marketing organization of growers. It has 275 members whose orchards amount to about 5,000 acres. The association itself operates no packing plants. However, about 40 per cent of its members, representing the principal acreage, have plants for grading, packing and storage. Many of these are of large capacity. The growers of smaller acreage have sorting and packing sheds and their output, that in the aggregate amounts to considerable, is known as orchard pack. This association, it is learned, is handling this season from 1,000 to 1,200 cars of apples, practically all of which are being packed in oiled wraps.

Wenatchee-Okanogan Co-op. Fed.

The Wenatchee-Okanogan Co-operative Federation handles the products of 12 associations or organizations that operate central grading and packing plants in the district, in nearly all of which mechanical apple graders are used. Their facilities include ample storage. The growers and packers of this organization are utilizing oiled wraps to a large extent. This marketing federation anticipates handling 2,200 cars of apples of this season's crop.

Other Organizations.

Among other organizations is the Wenatchee Valley Fruit Exchange, co-operative marketing body of growers and packers. The Earl Fruit Co., which has an apple orchard at Oroville, operates at Wenatchee a plant for grading, packing and common storage, where the crops of individual growers, as well as its own, are handled. Its pack for this season will amount to 50,000 boxes, comprising Winesap, Newtown and White Winesap, Pearmain. The activities of the several organizations, as above outlined, are given as an exemplification of equipment, methods and the scale of operations in this district.

Pecan Marketing Organization

by C. A. Whittle

A co-operative selling organization of pecan growers of the South was launched at Albany, Ga., July 1. The announced purpose of the organization is to standardize pecans to market according to grade, to establish orderly marketing and to promote a wider use of the pecan at home and abroad.

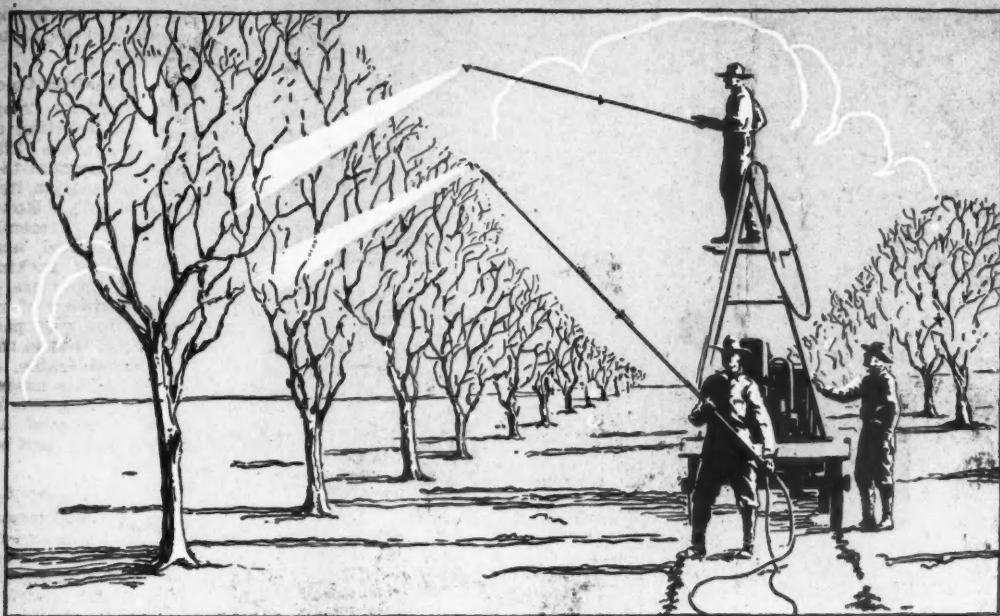
Those who became charter members of the organization can market more than a million pounds of nuts this year and the prospects are good for controlling at once the bulk of the thin-shelled nuts of the South.

The official title for the organization is "Southern Pecan Growers' Exchange." The headquarters are at Albany, Ga.

R. B. Small, Macon, Ga., is chairman of the temporary organization and the following individuals, who are prominently associated with the pecan industry of the South, constitute the committees: Organization Committee—B. W. Stone, Thomasville, Ga.; H. H. Simmons, Jacksonville, Fla.; H. U. Jackson, Baconton, Ga. Executive Committee—J. M. Patterson, Albany, Ga.; A. M. Wynn, Leesburg, Ga.; H. K. Miller, Monticello, Fla.; S. McGlennon, Rochester, N. Y.; J. Drake, Putney, Ga.; C. S. Parks, Thomasville, Ga., and H. A. Peacock, Albany, Ga.

J. S. McGlennon is president of the National Nut Growers' Association and H. K. Miller is president of the Georgia-Florida Pecan Growers' Association.

The need of such an association has been realized for some time and steps taken are the culmination of considerable preliminary work. Nothing has occurred in recent years that has enhanced the outlook for pecan growing in the South as the perfection of this organization.



Dormant Spraying

You probably realize the wisdom of spraying your trees in the Fall to kill scale and the over-wintering eggs of insects like aphids and leaf roller.

Furthermore, you want your trees at all times able to pass inspection.

Lime-sulphur has been widely used as a dormant spray, but it is hard to handle; it burns hands, gets into your eyes, teams have to be covered and your spray equipment must be thoroughly cleaned soon after its use.

Furthermore, lime-sulphur is no spreader. Even if you spray from the top and all sides it is difficult to get a sufficient coverage to assure good pest control.

Probably you have tried oil sprays, adding resin or fish oil or other things in the attempt to make the oil emulsify with water.

You know how hard it is to keep this emulsion intact.

The trouble is that oils so prepared are at best incapable of properly and consistently absorbing water, with the result that in spite of frequent agitation, your solution separates.

This may happen either in your tanks or on the tree.

What you should have and what you can get now is a pure, heavy, self-emulsifying oil which possesses the property, without having anything added to it, of forming a complete and permanent emulsion with water.

Sunoco Spray Oil is just such an oil. By a special and uniform process this new oil is refined in such a way that neither we nor you are obliged to add anything to it to make it a perfect emulsifier.

The result is your supply of Sunoco Spray Oil is ready for the water any time you are ready. Just a vigorous stirring and you have an emulsion which, once made, positively cannot separate.

What you don't use you can put away for the next spraying time.

Sunoco Spray Oil is so heavy that for dormant sprays 1 to 20 is enough for high control, especially of oyster shell scale, San Jose scale, and scurfy.

One dormant spray treatment of Sunoco Spray Oil will effectively control all scale insects besides leaf roller, bud moth, red spider, mites and many other orchard insects.

The reason for this high control is that this perfect oily emulsion will spread its thin film over the bark, into crevices and completely envelope the exposed surfaces in its killing film.

You will find that the cost of Sunoco Spray Oil compared to oil compounds is very low. Furthermore, it takes less of Sunoco Spray Oil to cover surfaces than other oils, because its emulsion possesses that extreme oiliness which enables it to crawl in and around all surfaces.

Besides being inexpensive it is safe to handle, easy to mix [once mixed it stays mixed without constant agitation] and efficient.

If you have tried unsuccessfully to use oil or oil compounds, order this new Sunoco Spray Oil and see how easy it is to handle and what splendid condition your trees will be in next Spring.

Can We Help You?

Some time you may find on your trees certain scales or pests which you can't classify, and which you don't know how to handle.

Our Spray Oil Department, under Prof. J. G. Sanders, formerly with the U. S. Government, State Entomologist of Wisconsin and later State Zoologist of Pennsylvania, will gladly and at no charge try to help you with any of your orchard problems.

Write him fully. You will find Prof. Sanders thoroughly conversant with all orchard problems, and interested in giving you prompt and dependable help.

Address Sun Oil Company, Finance Bldg., Philadelphia. J. G. Sanders, Spray Oil Dept.

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This book tells you how to make inexpensive sprays that do the work. You don't have to fuss with them and they're safe to handle and mix. Send for your copy today.

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A cheerful rug works wonders!

Just a corner of the kitchen in an old remodelled farm house. But how inviting and "homey" it is with the new Congoleum Rug on the floor. And how supremely neat.

Gold-Seal Congoleum Rugs will brighten up any room in the house—from kitchen to living room. They are as artistic and colorful as woven rugs that cost many times Congoleum's modest price. Their durability makes them a real economy.

And they are so much easier to keep clean—a few strokes of a damp mop and their smooth waterproof surface is spotless. Gold-Seal Congoleum Rugs are impervious to water, grease or spilled things—and they lie flat without fastening.

Popular Sizes—Popular Prices

6 x 9 feet	\$ 9.00	The pattern illustrated is made	1½ x 3 feet	\$.60
7½ x 9 feet	11.25	in the five large sizes only. The	3 x 3 feet	1.40
9 x 9 feet	13.50	small rugs are made in other	3 x 4½ feet	1.95
9 x 10½ feet	15.75	designs to harmonize with it.	3 x 6 feet	2.50
9 x 12 feet	18.00			

Owing to freight rates, prices in the South and west of the Mississippi are higher than those quoted.

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You will find it (printed in dark green on a gold background) pasted on the face of every guaranteed Gold-Seal Congoleum Rug and on every few yards of Gold-Seal Congoleum By-the-Yard. It is visible evidence that you are getting genuine Congoleum quality and is your guarantee of absolute satisfaction or your money back.

An interesting, illustrated folder showing all the patterns in color will gladly be sent to you free on request.

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